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JOURNAL *of* EDUCATIONAL RESEARCH

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THE CONSTRUCTION OF FIRST-GRADE READING MATERIAL

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SOME years ago, there appeared in this Journal an article entitled "The Effectiveness of Practice Tests in Teaching Beginning Reading." The method described was one by which children of the low first grade mastered the earliest steps of reading largely through their own efforts. A so-called "lesson pad," a "story book," and a "dictionary" were the necessary paraphernalia.[1] At the request of the editor, the writer describes in this article the steps used in preparing the high first-grade material which is a direct follow-up of the material characterized in this previous issue of the Journal. It is hoped that this discussion may serve in some degree to stimulate further the already rapidly growing interest in the scientific preparation of first-grade materials in general.

The first step of any undertaking is that of setting up clearly defined aims. In preparing this new material a list of twenty-five aims was formulated, but, since space is limited, only those six which were particularly characteristic of this method will be listed. They were (1) to provide the child with a vital purpose for carrying out each lesson; (2) to make his use of reading a tool from the beginning, rather than an activity for the sake of mastering the subject; (3) to enable him to help himself in his reading activities; (4) to develop his ability to attack new words by a variety of methods; (5) to give him experience in several different types of reading; and (6) to permit him to progress at his individual rate.

[1] Smith, Nila B. "An Experiment to Determine the Effectiveness of Practice Tests in Teaching Beginning Reading," *Journal of Educational Research*, 7:213-28, March, 1923. The materials now called "Picture-Story Reading Lessons," Series I are published by the World Book Company. Series II is described in this article.

STEPS IN DEVISING THE METHOD

Determining the vocabulary.—It is important that the first symbols which the child learns to read represent those which will serve him best in his immediate reading as well as be valuable to him in his later reading. The Thorndike Word List comprises the words used in general reading, and the words of highest frequency in this list correspond to a large extent to those most often found in primers and first readers. A check of the frequencies of the words used in ten primers and ten first readers revealed the fact that many of the words of highest frequency in these readers had a low frequency in the Thorndike list. "Baby" for instance, occurred as the fifty-first word in the frequency list of the ten common first readers, whereas it occurred in the second five hundred of the first thousand words in the Thorndike list. Consequently, in choosing the vocabulary for this new material, 360 words were selected—250 having the highest frequencies in the Thorndike list and 90 having high frequencies in ten commonly used first readers but low frequencies in the Thorndike list. Thus, the child was to be taught the words which he would need most in his immediate reading and in his later reading.

250
+90
=340

Preparing stories.—Until very recently, first-grade readers of the story type were confined entirely to folk tales or to adaptations of folk tales. Believing that in this day of realistic teaching a steady diet of fanciful tales would tend to give the child a distorted idea of the real life about him, the writer proceeded to prepare sixty stories; some were written purely for entertainment and others gave information gathered from industries, civics, health, and nature. Some of the old folk tales, nursery rhymes, and fables were distributed through the collection.

When the story-book was completed, a question arose as to whether these realistic stories would have as great an appeal to children as the folk tales had, and whether there would be any differences of appeal among the realistic stories. To obtain some information concerning this problem, copies of the stories were given to eight teachers who were asked to keep a record of the interest which their pupils showed in the different stories during the course. The degree of appeal was gauged by the child's in-

terest in studying the story, his discussion concerning it, and his desire to re-read it. Judged by these observations, each story read by a pupil was recorded as having made an excellent, good, medium, or poor appeal to him.

The combination of the tabulations for the different types of stories is summarized in Table I.[2] There was not a wide difference in the degree of appeal which the different types of stories made to the children, for all kinds appealed to the majority of them to a high degree. The folk tales, however, made slightly the highest appeal to the greatest majority of the pupils, although there were a few to whom the appeal was very low. Realistic stories were almost as popular as the folk tales, and the nursery rhymes and fables followed closely after them.

The results of this study afforded a basis for the selection of the thirty stories which made the highest appeal, and these were

TABLE I

PERCENTS OF CHILDREN TO WHOM EACH TYPE OF STORY MADE SOME APPEAL

	Excellent	Good	Median	Poor
(1)	(2)	(3)	(4)	(5)
Folk tales	88	8	3	1
Realistic industry	84	10	5	1
Realistic nature	81	10	6	3
Realistic health	78	14	7	2
Realistic entertainment	76	14	8	2
Realistic civics	74	19	6	1
Nursery rhymes	72	18	9	2
Fables	65	16	14	5

used as the foundation of the course. The investigation was not extensive enough to warrant any specific conclusions regarding stories in general, but it does bear out the belief of many educators that there is great diversity in the reading interests of children.

Noting children's ways of deciphering new words.—Simultaneously with the study of children's interests, there was conducted an investigation in children's natural methods of attacking new words, so that some information might be procured to use in organizing the course of lessons. Previous investigations have proved

[2] The data in this table are given also in *Teacher's Manual,* Picture-Story Reading Lessons, Series II, p. 7.

that some children have a natural phonetic sense which they develop and depend upon from the beginning. For such children, phonics is entirely without value. An attempt was made to find out what these methods were, for the writer surmised that the children who did need help might be taught much more effectively through the natural methods of other children than by some artificial system of phonics evolved by an adult.

To determine the ways by which children naturally attack new words when they have had no phonetic training, the practices of the beginning first-grade pupils in four representative schools were carefully watched. These children had finished a beginning method in which no phonetic training was given and, at the time of the investigation, were reading from other primers and first readers. Space does not permit a detailed explanation of the method of collecting the data, but the following summary shows the different methods of attack which pupils used in solving new words:

Methods of Deciphering New Words	Number of Pupils
1. Fitting them into the context of the sentence	68
2. Looking at an accompanying picture	67
3. Analyzing or synthesizing compound words	43
4. Analyzing a known word to get a smaller unknown word within	40
5. Comparing the new word with the rhyme word	39
6. Combining a generalized consonant with a letter group	24
7. Applying a vowel sound after generalizing it from a familiar word	19
8. Sounding syllables	7
9. Spelling the word	3
10. Sounding letters	2

Sounding syllables, spelling the word, and sounding letters occurred with such small frequencies that the pupils who used these methods were questioned; and it was found that these children were repeaters who had had phonetic training the previous term. These were not, therefore, considered natural methods of attack.[3]

In the light of this investigation, the methods of attacking new words were introduced in the lessons of this new course according to the following scheme: Lessons 1 to 3, context; Lessons 4 to 6,

[3] See also Smith, Nila B. "Present Situation in Phonics," *Elementary English Review*, 3: 281, November, 1927.

rhymes; Lessons 7 to 9, analysis and synthesis of compound words; Lessons 10 to 13, finding little words in known words; Lessons 14 to 22, generalizing the initial consonant and combining with familiar little words; Lessons 23, 24, 29, and 30, generalizing initial consonants and combining with such letter groups as *ay;* Lessons 25, 26, and 30, generalizing initial consonant groups; Lessons 27 and 28, generalizing long vowels in words ending with final *e*.

These methods of deciphering new words were accumulative from lesson to lesson; and, although each was taught especially in connection with a certain set of lessons, as just specified, emphasis was placed upon all the methods of attack naturally used by children rather than confining the methods of solving words to phonics alone. Since some truly phonetic ways of deciphering new words such as sounding and blending consonants, letter groups, and vowels were also necessary, those elements were chosen which had the highest frequency in the count of elements made by Miss Cordts, of the University of Iowa.[4]

Grading the stories.—The content of the thirty stories chosen for the course was revised so that a certain number of new words were introduced in each. These new words were of types which would fit into the scheme just described. The stories were arranged in the order of increasing difficulty according to the judgment of the writer; but, since an adult's judgment is so often at variance with the actual responses of children, it was deemed advisable to obtain some data through the use of stories by the children. Six teachers, each of whom taught different types of children, were asked to have the stories read by their pupils. They were requested to record the number of words missed in each story, the length of time taken to read each story, and any difficulties encountered. The stories were again graded in the order of difficulty as determined by these findings.

During the course of this study, the fact was frequently revealed that certain forms of diction gave pupils as much difficulty as lack of the recognition of words. For example, they would often struggle with a sentence such as "Up to the tree the little bird

[4] Cordts, Anna D. "Facts for Teachers of Phonics," *Elementary English Review*, 3: 116-21, 125, April, 1926.

flew," whereas they would read it with ease when it was written, "The little bird flew up to the tree." Consequently, three teachers were chosen to determine means of improving the diction for the use of first-grade children. One of these teachers taught American pupils from excellent homes; another had American pupils from the poorer homes of a factory district; and the third, foreign children in one of the slum districts. Each had her pupils read the stories and as they did so she jotted down in a notebook any difficulties which they experienced, together with the wording which they naturally used—if this wording was grammatically correct. The stories were revised to take advantage of this study in diction.

REVISING THE MATERIAL TO MEET THE ORIGINAL AIMS

After conducting the investigations already described—and a few lesser ones which cannot be discussed in this article—the material seemed ready to be shaped into the final form which was to achieve the aims listed at the beginning of this article. Each child was given a book which contained stories to be read for appreciation and later to be dramatized. Directions accompanied each story which gave instructions for the drawing of the scenes, the planning of the properties, and the acting of the play. Each pupil also received a dictionary which contained the words used in the story-book together with helps which were designed to assist him in finding out the words for himself.

A brief description follows of the steps which a pupil who is progressing at his own rate takes in carrying out any one of the lessons. An attempt is also made to show the way in which the course was planned to enable the pupil to achieve the aims already listed.

1. The pupil first reads the story silently for the purpose of finding out about it so that he may play it. Thus the lesson is motivated primarily through an appeal to the child's instinctive interest in dramatization. When he encounters any unrecognized words, he looks them up in his dictionary thus applying the self-help aim.
2. If the pupil is unable to find out the new words for himself by referring to the dictionary, he joins a group of children who

are having difficulty in applying the same word-getting process. This entire group receives intensive training designed to develop their power in using this particular method of unlocking new words. Thus, the aim of giving children control over the various methods of attack is achieved. The pupils who have no difficulty in finding out the words for themselves receive no training in the analysis of words.

3. The pupil silently reads and carries out the directions for drawing the scenes. This activity is motivated by appealing to the child's instinctive interest in construction, it affords him an opportunity to use his reading as a tool and gives him experience in following directions. This is different in type from the appreciative reading which he did in his first step.
4. The pupil silently reads questions under the heading, "What to Use in the Play" and plans to use the available properties which will serve his purpose in dramatizing the story. He also silently studies the directions for "What to Do and Say" in giving the play. Thus, he continues to use reading as a tool.
5. The pupil is tested by the teacher upon the mastery of his lesson. First, the teacher checks his comprehension of the directions by looking over the scenes he has drawn to see if he has carried out the directions correctly. She then tests his comprehension of the story by asking a few general questions on its content, and one or two interpretative questions to test his ability to read between the lines. Thus the child experiences two additional types of reading, to interpret the story and to answer questions. Finally, the teacher asks the pupil to read certain parts of the story orally in order to test his ability in the recognition of words and in oral reading.
6. The pupil invites others who have completed the lesson to join him in giving the play. Thus, individual achievement culminates in a group experience which serves to promote the spirit of group cooperation.
7. The group silently reads and acts out the dramatization in response to the directions, "What to Say and Do." This gives further experience in the silent reading with a purpose and oral reading to an audience.

8. The pupil colors in a square on his score card or progress chart as an indication that he has completed that particular lesson. This act provides a third line of purposeful experience since it appeals to his instinctive interest of accumulation.

Following the final organization of material a manual of instructions was written for the teacher's use in carrying out the steps and aims which have been briefly presented. The material was then placed in the hands of four teachers to use with their classes. One of these teachers taught Polish pupils; one, Italians; one, middle-class Americans; and one, high-class Americans. Each teacher was provided with a blank form for each lesson, upon which she recorded criticisms and suggestions which occurred to her as she covered the course. The topics listed on these blanks were:

1. Story:
   (a) General reaction
   (b) Imperfections
   (c) Improvements
2. New Words:
   (a) Words got readily
   (b) Words giving trouble
   (c) Successful methods found
   (d) Exercises used
3. Construction Work and Handling Pictures:
   (a) Difficulties
   (b) Remedies found
4. Giving Plays:
   (a) Difficulties
   (b) Suggestions
5. Miscellaneous

The work of these classes was continually observed by the writer to discover weaknesses in the material and to devise more effective and economical methods of handling the course under the plan of individual progress. Frequent conferences were held with the teachers concerned to discuss suggestions for improvements. At the end of the semester both the material and the manual of instructions were revised. The same scheme was employed during the next four semesters with increasingly larger groups of teachers—the group of the last semester included the 350 teachers of Detroit who were then teaching pupils in the second semester of the first grade. At the end of this semester, the suggestions from teachers were so few in number as to be of little value in further revisions of the material.[4]

[4] The writer took this as an indication that the method was fairly well standardized, although suggestions for improvement are still sought.

TESTING THE EFFECTIVENESS OF THE METHOD

The preparation of this material entailed a long and laborious process. Since many children have been taught successfully to read with materials which have been hastily produced, the question arises as to whether or not it is worth while to devote the necessary time and effort to the scientific preparation of materials for these lower grades. In order to obtain some checks on this point, a carefully controlled experiment was conducted.

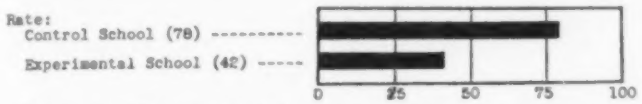

Figure 1. Mean rates of the pupils of the two groups on the Gray Oral Check Test, January, 1925

The new material was placed in five schools of different types. For each of these experimental schools using the new material, a control school was chosen which was to use a conventional method

Figure 2. Mean number of errors made by the pupils of the two groups on the Gray Oral Check Test, January, 1925

and which matched the experimental school as nearly as possible in number, age, nationality, intelligence, and previous training of the children; ability of the teacher; amount of supervision; and

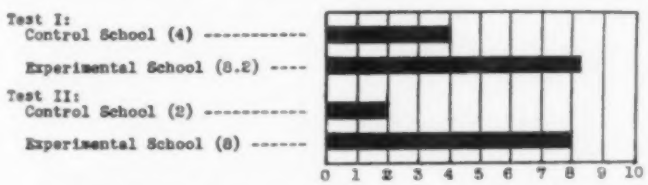

Figure 3. Median scores on Haggerty Reading Tests, January, 1925

amount of time devoted to reading. At the end of the semester three standard tests were given to both the experimental and con-

trol schools, and the results tabulated for each group separately. The results of these tests are depicted in the graphs shown in Figures 1, 2, and 3.

In studying the first two graphs, it will be seen that pupils in the experimental schools in which the new materials were used excelled those of the control schools in speed of reading and made fewer errors on the Gray Oral Check Test. The median length of time required for reading the paragraphs in the experimental schools was 42 seconds, that of the control schools, 78 seconds. The pupils in the experimental schools had a median score of 3 errors; the pupils in the control schools had a median of 5 errors.

The median scores on the Haggerty Silent Reading Tests are pictured in Figure 3. In Test 1 the experimental group earned a median score of 8.2 as compared with a median score of 4 made by the control group. In Test 2 the experimental classes again excelled, achieving a median score of 8 which is to be contrasted with a median score of 2 for the control group.

TABLE I
MEDIAN SCORES ON THE DETROIT WORD RECOGNITION TEST

	Experimental Schools	Control Schools
(1)	(2)	(3)
X Group.....	1,000	981
Y Group.....	1,000	928
Z Group.....	920	838

The results of the Detroit Word Recognition Test were tabulated separately for each of the X, Y, and Z groups (see Table I). The X's of the experimental group earned a median score of 1,000 as compared with the median score of 981 earned by the X's of the control group. The Y's of the experimental earned a median score of 1,000 as compared with 928, the median made by the corresponding pupils of the control group. The Z's of the experimental group also made a gain, earning a median score of 920 as compared with 838, the median score of the Z's in the control group.

Measurements also have been made of large groups of children representing the high first grades of Detroit schools. Since the

present city-wide use of the material came about through the voluntary requests of the principals and teachers, there were several terms in which the new method was used in part of the schools, while the conventional materials were used in the remainder of them. The results of one of these city-wide tests will be given. During the semester which ended in January, 1925, approximately sixty-five hundred children had been taught with the use of the new material, and thirty-five hundred had been taught by the conventional method. The Detroit Word Recognition Test was given in all the high first grades of the city at this time, and the scores of the two groups were tabulated separately. The results of this tabulation are summarized in Table II.

TABLE II
CITY-WIDE MEDIAN SCORES ON DETROIT WORD RECOGNITION TEST

	X Group	Y Group	Z Group
(1)	(2)	(3)	(4)
Pupils using new material	1,000	959	843
Pupils using old material	971	818	606

The X, Y, and Z groups using the new materials earned median scores of 1,000, 959, and 843, respectively, as compared with the respective median scores of 971, 818, and 606, made by the pupils of X, Y, and Z groups who used the conventional material. Thus the users of the new material showed decided gains in this city-wide survey.

These facts show that the new method has produced measurable results, which were superior to the results obtained from the use of conventional reading materials, with all groups of children in a representative school system. This material, of course, only represents one of the modern methods of reading. Other carefully prepared schemes are also producing markedly better results than those which we have previously been able to obtain; all of which tends to prove the desirability of devising and using scientifically prepared material in teaching young children.

A YEAR OF WINNETKA RESEARCH

MABEL VOGEL
AND
CARLETON WASHBURNE
Winnetka, Illinois

THIS summary of a year's work of the research office, in Winnetka, is published for three purposes. First, it presents a convenient summary of several investigations of general interest; second, it shows the direct practical value of a research office to even a small public-school system, as well as to the general cause of educational research; and finally, it illustrates the type of report and the type of research which can sell such a department to a board of education.

A full-fledged research office, with a director, one or two assistants, and from one to three clerks, is not ordinarily found in a small school system which has an enrollment of some seventeen hundred pupils. Had we attempted to secure the establishment of such a research office a few years ago, our attempt would have been worse than futile. We began, however, by doing research without asking for money. Winnetka teachers were trained to participate in various investigations after school hours. Their investigations helped to make the program and curriculum of the Winnetka schools more scientific and effective and contributed directly to the still meager fund of available scientific knowledge concerning education generally. Certain investigations carried on by Winnetka teachers on this volunteer basis were of so elaborate a nature and of such far-reaching implications that it was possible to secure grants from the big foundations to help them complete the work they had undertaken. The Winnetka public schools received two grants from the Commonwealth Fund and one from the Carnegie Corporation on different occasions.

The definite results of research in the schools of Winnetka, aided by the fact that the large foundations had felt this work to be of sufficient importance to justify subventions, made it possible to induce the Winnetka Board of Education in April, 1926, to establish a research office, with an adequate staff, as a part of the public-school system.

Whether or not such appropriations were to continue and whether or not the Board of Education was to "be sold" on educational research as a practical and vital part of the school system depended upon the work of the research office during that first year. In March, 1927, therefore, the following report was prepared for the Board, a special meeting was called, and the entire evening given to its consideration. The report was illustrated here and there with charts.

The result was that the finance committee at its next meeting unanimously recommended the adoption of the superintendent's budget which included the continuation of the research office; and the Board of Education at its next meeting, acting on the finance committee's recommendation, unanimously passed this budget. Not one question was raised as to the desirability of the continuation of research in the Winnetka public schools. Because we believe that other school systems should be carrying on somewhat similar research, both for their own benefit and for the growth of scientific knowledge in education, and because we believe, on the basis of our own experience, that this sort of program commends itself to an intelligent lay board of education, we are publishing herewith the report of the research carried on at Winnetka for the fiscal year 1926-27.

The report as here published has been abridged, because of the limitation of space, by the omission of several problems with their discussions. These problems concerned themselves with the following topics: the suitability of the Winnetka methods and materials for teaching arithmetic in the first three grades, the ability of Winnetka children to apply their arithmetic to the solving of practical problems, the completeness of the vocabulary in the Winnetka Individual Speller, the efficiency of the Winnetka children in spelling, and the elements of content which influence grade-placement of children's supplementary reading material.

ARITHMETIC

Difficulty of number combinations.—Which combinations in addition, subtraction, multiplication, and division are so inherently

difficult for children as to require a great deal of drill? Which ones are so inherently easy as to require very little drill?

Seven hundred and fifty Winnetka children in Grades III to VII were given tests in the facts of addition, subtraction, multiplication, and division. Three forms of each tests were given. On Form I the combinations were arranged in descending order of difficulty, the supposedly hardest combinations coming first, according to the results of a somewhat similar study made by Clapp, of Wisconsin.[1] Form II was arranged in ascending order of difficulty, the easiest combinations coming first. In Form III easy and hard combinations were alternated. The combinations on each form were tabulated according to the number of times each one was missed. A comparison was then made between each form of our Winnetka test and the results of the study made by Clapp. In order to check our results with those of other cities, and especially to see whether at the time of learning certain combinations were harder than others, we secured the cooperation of about fifty other communities which were using our arithmetic materials. They gave our tests, and then we analyzed their results and compared them with our own.

The apparent difficulty of combinations is influenced by their position in the test. Certain combinations, however, are always found among the quarter most often missed, regardless of position. These evidently are inherently difficult for children; $7 + 9$, $13 - 9$, 8×7, and $54 \div 9$ are of this type. Other combinations are always found among the quarter least often missed. They are inherently easy for children, and they include such combinations as $2 + 2$, $4 - 2$, 2×5, $25 \div 5$.

In preparing arithmetic materials for our children, we want to be sure that the inherently difficult combinations are getting special stress. In the light of this study, we have revised our individual arithmetics, so that every combination is used—the difficult ones occurring more often than the others and the easiest ones getting less stress than the others.

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[1] Clapp, F. L. *The Number Combinations: Their Difficulty and the Frequency of Their Appearance in Textbooks.* Madison, Wisconsin, University of Wisconsin, 1924. pp. 22-29. (Bureau of Educational Research Bulletin, No. 2)

Grade-placement of arithmetical processes.—In what grades can each arithmetical process be most effectively introduced? What is the optimum order of presentation of the various elements of arithmetic?

These problems are being attacked by the Committee of Seven of the Superintendents' and Principals' Association of Northern Illinois. The Winnetka Research Office is handling our share of the investigation and is assisting in the investigation as a whole. The method of attack follows three general lines. First, a study has been made of the present practice in one hundred and twenty school systems. This study shows the grade in which each topic is introduced and the grade in which each topic is completed, school system by school system. Second, a comparison is being made as to the arithmetic ability of sixth-grade children in three types of school systems, that is, schools which do not begin any formal arithmetic until Grade III, those which begin formal arithmetic in Grade II, and others which begin formal arithmetic in Grade I. Intelligence tests and arithmetic achievement tests are being given to the sixth grade in all three types of schools.[2] Third, the cooperation of nearly one hundred school systems has been secured so that each topic may be taught, under controlled conditions in three different grades, to children of known intellectual capacity. The readiness with which the children of each grade can learn the new process or topic will be carefully measured and tabulated.

The first part of the study is completed and shows great disparity of practice among school systems in regard to the grade in which certain topics are introduced and great uniformity in regard to others. Conclusions on the second part of the study will be available later, those on the third part not for, at least, a year or two.

If we find that children who begin arithmetic in the first grade make a distinctly better record in Grade VI than do those who begin in third, more stress will be placed on first-grade arithmetic in Winnetka. If, on the other hand, we find that those who begin arithmetic in Grade III do as well, or almost as well, as those who begin two years earlier, we shall remove formal arithmetic entirely from the first grade and greatly decrease the amount in second.

[2] To be reported in the *Elementary School Journal.*

No other practical results will be possible until the study is completed. When it is completed, it will lead to a complete reorganization—on a scientific basis—of the arithmetic curriculum, not only in our own schools but in many other schools. This reorganization should result in much greater ease and effectiveness of arithmetic teaching. The investigation is a pioneer one, the first of its kind, and is one of far-reaching importance.

LANGUAGE

As a means of comparing the language achievement of children trained by the Winnetka method and the similar accomplishment of other children, a test was prepared in which the sentences and paragraphs were written without punctuation or capitalization. The need for every important element of punctuation and capitalization occurred in this test. It was printed and submitted to all Winnetka children in Grades III, IV, V, VI, and to the children in the corresponding grades of a number of other public-school systems in different parts of the United States.[3] Compositions written by these children were collected by their teachers and returned to us with the tests. All tests and compositions were scored by us, and the results were tabulated grade by grade and element by element. The various problems connected with this study were then attacked.

Effectiveness of formal language instruction in Winnetka.—Is the Winnetka method of teaching formal language proving effective?

The scores of Winnetka children were compared with those of other cities, both by test results and compositions, grade by grade. The comparisons showed that Winnetka children did distinctly better on their tests than did the children in other schools, but in their compositions they did neither better nor worse than the average of the other schools. Our method of instruction therefore appears to be decidedly effective in training children to pass our type of language test, but neither more nor less effective than other methods used elsewhere in training children to apply their knowledge of punctuation and capitalization in daily practice.

[3] Financed in part by the English Council. Carried out in collaboration with Mr. S. A. Leonard of the University of Wisconsin.

Now, therefore, less stress is being placed on preparation for passing language tests while more stress is being placed on the application of knowledge concerning the formal elements of language to daily work in composition. Experiments are going on in the classroom to determine more effective means of bridging the gap between theory and practice.

Validity of language tests.—Is our method of testing the children's ability in language work a true measure of this ability?

As indicated before, it has been customary in Winnetka and elsewhere to test children's knowledge of punctuation and capitalization by giving them unpunctuated, uncapitalized paragraphs in which to supply the necessary elements of punctuation and capitalization. A detailed comparison was made as to the success and failure of children in the compositions and in the tests. Each child's composition was analyzed and note was made as to whether or not the elements which he failed to use correctly in his composition were also wrong in his test. Coefficients of correlation were found between children's success in their compositions and their success in the tests.

No relation whatever was found between the test results and the children's compositions. A child might do well in both or badly in both, or well in one and badly in the other. They apparently had nothing to do with each other. Our tests proved to be entirely useless as a measure of children's ability to use punctuation and capitalization in their compositions.

The tests were carefully analyzed to determine how consistent they were within themselves. A special formula was developed for measuring consistency, and the tests were found to be inconsistent. We are about to devise new tests and to repeat the experiment.

SPELLING

Comprehension of spelling vocabulary.—Are we trying to teach children to spell words the meanings of which they do not know? How can we determine which words they do not know?

Fifty words of varying degrees of familiarity to children were chosen from the spelling lists. All third-, fourth-, fifth-, and sixth-grade children were asked to check the words of which they did not

know the meaning. After doing this, they were given a test on the same list of words to determine whether their judgments were valid. The results were tabulated, grade by grade, to ascertain whether or not we could rely on children's judgments in each grade in determining which words were outside their vocabulary. The children were also asked to indicate in their spellers all words which were unfamiliar, and these results were tabulated.

On the average, there was an agreement of more than 80 percent between the children's judgments and their test results. This percent of agreement increased steadily from Grade III to VI, where it reached 86 percent. It is evident, therefore, that we can rely, in general, on the joint judgment of the children as to which words are unfamiliar to them. Applying this judgment to our spelling lists, we find that the meanings of many words are unfamiliar to the children who are learning to spell them.

The children have checked the unfamiliar words on all our spelling lists, and we are tabulating these words. Some words are being temporarily taken out of the spelling lists until the meanings have been taught.

READING[4]

Primary reading materials.—Are the Winnetka materials and methods of teaching beginners to read effective and satisfactory? How can they be improved?

An experimental edition of the Winnetka primary-reading material was published with the understanding that the final edition could be revised.[5] About seventy-five schools cooperated in the use of this experimental edition. Each cooperating teacher filled out a detailed questionnaire after using the material, noting desired improvements in the material and in the teacher's instruction book. The replies were tabulated in order to determine the ways in which the material and method could be improved.

On the whole, the cooperating teachers found the material very satisfactory for teaching beginners to read. It provided for individual differences and kept the children interested and happy.

[4] Financed by Miss Youngquist and Mr. Washburne.
[5] Rand, McNally Company, Chicago, publishers.

Certain changes in the teacher's manual, more pictures, and some revision of the stories were suggested.

The teacher's manual has been revised according to the recommendations received. To make the reading books more interesting and efficient some new stories were introduced, others were revised, and a number of pictures were added.

Grade-placement of children's books.—How can we determine the degree of reading ability necessary for the reading and understanding of any book? Or, conversely, how can we determine in what grade a given book should be placed? How can we analyze material which we write for children of a given grade, to determine whether this material is written simply enough to be read and understood by the children for whom it is intended?

The *Winnetka Graded Book List* was used as a basis for this study. It is a list of seven hundred widely read books, graded according to the reading ability of the children who had read and enjoyed them. One hundred and fifty-two books from the lists of Grades III to VIII were chosen to be used as a basis for examination, and they were analyzed carefully for all possible elements of difficulty. Since certain elements of difficulty seemed to have more consistent relation to the placing of the books than others did, a formula was devised which, it was hoped, would predict the grade in which the book could be read and understood. This formula, on being tested, proved surprisingly effective. The correlation between the grade in which books would be placed by our final formula and the grade in which the same books are actually read and enjoyed was .85. Elements making up this formula in different proportions, are:

1. The number of different words that occur in a sampling of a thousand words from the book is reckoned. For example, in a thousand words from a third-grade book, there are about 350 different words, while in a thousand words chosen from an eighth-grade book, there are 500 different words.

2. The number of uncommon words found in a thousand-word sampling is determined by comparison with Thorndike's list of the ten thousand most commonly used words in the English language to determine which words are uncommon.

3. The total number of prepositions is counted in a sample of a thousand words.

4. The number of simple sentences is estimated in a sample of seventy-five sentences.

By measuring these four elements in any book and by combining them in the right proportion, the degree of reading ability necessary for understanding and enjoying that book can be predicted with considerable accuracy. Therefore, the grade to which a book belongs can be determined, as well as whether or not the instructional material written for children of a given grade is within their grasp.

This study was the most elaborate and difficult one of the year and is the most far-reaching in its practical results. Certain final checks and validations are still under way; when they are completed the study will be published and the formula made available for general use. It will be used in Winnetka for analyzing our own materials of instruction and for grading books for our children's reading. Already it has been used in the following ways:

1. After writing the necessary explanations and practical problems for the textbooks in arithmetic to be used as a part of the individual technique, the contents of each book were judged by this scheme to know whether it would be too difficult for the children of the grade for which it was intended. A count was made of the number of different words, uncommon words, prepositions, and simple sentences, and the formula was applied. The results showed that the explanation and problems could easily be read and understood by the children using the arithmetic books. Had we found the contrary, they would have been rewritten and simplified.

2. Similarly, we examined the material written by the department of social sciences. A new textbook on social science, written for Grade IV, was tested and found to be exactly right in difficulty for children of fourth-grade reading ability. No changes in the material were necessary.

3. Certain librarians had challenged the place assigned to some of the books mentioned in the *Winnetka Graded Book List*. These books were examined and were found to be placed in the proper grade.

Hereafter, each important piece of writing for use by the pupils and each important book or text under consideration for use in our schools will be analyzed and graded by this formula. This will determine whether, as far as structure is concerned, it is within the range of reading ability of the children for whom it is intended.

GENERAL EFFICIENCY

Teacher efficiency in primary grades.—What is the relative efficiency of our first- and second-grade teachers in regard to tool subjects? Which teachers, if any, need decided help and supervision to make their work effective?

The first- and second-grade children were given a Haggerty Intelligence Examination to determine the average mental ability of each group. Children in Grade I were then tested as to their instant recognition of words selected from first-grade reading material. Children in Grade II were given an oral-reading test and a test in addition combinations. The results were reduced to a basis on which the mental age and scholastic achievement could be compared, and graphs were made for all groups showing the exact variation of each teacher's work from every other teacher's work.

Judged by the mental ability of their groups, certain teachers are getting superior results; others are not teaching their children as much as may rightly be expected of them. These results are shown to the teachers and their principals, failures are pointed out to the weaker ones, and advice and help are given to them.

High-school achievement of Winnetka children.—What are the net results of the individual technique and of the group and creative activities in Winnetka, as shown by the records of our children in high school?[7]

While we have had, as a result of our request a number of years ago, annual reports from the high school as to the scholastic records of our Freshmen in their academic subjects, and while these have shown a gratifying improvement for the most part from year to year and have shown us to be above the average of the township, the record has only gone through the freshman year and has only applied to academic work. A detailed study of the scholastic records of our children in all four high-school classes was made. The report cards of all New Trier students were tabulated subject by subject according to the schools in which the children had their elementary training. A similar study was made of the participation of students in the various organizations, such as clubs, musical groups, student council, and athletic teams; of their prominence in these fields; of the offices they held; and of other objective evidences of initiative, originality, and general social effectiveness. These were tabulated by schools and Winnetka graduates were compared with graduates from the other public schools in the township.

[7] Children who have their elementary training in Winnetka go to the New Trier Township High School, which is under a different board of education and superintendent and does not use the individual technique.

Students from Winnetka are the only ones who are above the average of the township in scholarship in each principal major subject. They are the only ones who are above average in scholarship in each class. On the whole, the percent of failure among the Winnetka students is less than that of the students from other villages. In proportion of students participating in extra-curricular activities, Winnetka leads. Winnetka also leads in proportion of offices held in various student organizations and in its participation in student government.[8]

It is now possible to answer definitely the question often asked by parents and the officials of other school systems, "What sort of record do children make in a class-system high school if they are educated by the individual technique in the elementary school?" We can say positively that, as far as our own children are concerned, whatever the causes, they certainly make a distinctly good record in high school.

FINANCE

Analysis of school costs.—In what ways have per capita costs increased in the Winnetka schools since 1921? What is responsible for such increases as may exist? Are the increases likely to continue?

The average monthly enrollment for each year from 1921 to 1927 was found. The annual expenditures under each of the principal items of our budget were divided by the average monthly enrollments in an attempt to determine the per capita cost. The element of instruction, which was the only material one in which the per capita costs had increased, was analyzed in detail and subdivided into such items as salaries of elementary teachers, salaries of supervisors, salaries of special teachers, supplies, and textbooks; and the per capita cost of each of these items was found. As a means of analyzing the increasing cost of teachers' salaries, the amount of training and experience of our teachers in 1927 was compared with that of preceding years.

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[8] Washburne, Carleton, and Raths, Louis Edward. "The High-School Achievement of Children Trained under the Individual Technique," *Elementary School Journal*, 28: 214-24, November, 1927.

In general, enrollment increased more rapidly than assessed valuation. Tax receipts fortunately, owing to increased tax rates, also advanced more rapidly than assessed valuation. This made possible an increase in the per capita expenditures. The increase in per capita expenditures was due entirely to a single item, that of instruction. The increase in this item can now be definitely accounted for by the fact that the number of supervisors per thousand children and the number of special teachers per thousand children had increased. The average salary of these special teachers and supervisors had gone up materially. The per capita increase in the cost of grade teachers rose to 1924, but it has dropped since that time, owing to a decrease in the number of grade teachers per thousand children, which item more than offsets the increased average salary of these grade teachers.

The general status at the present time is that we have a larger number of supervisors and a larger number of special teachers per thousand children than ever before, that all types of teachers are receiving better salaries, and that all types have had more experience. This represents a highly gratifying condition in our organization, but one for which we are necessarily spending more money per capita than at any time in the past. Since we know which items are on the increase and which ones are on the decrease with our continued growth, we have a sound basis for working out our new annual and quadrennial budgets.

EDITOR'S NOTE.—Since the manuscript of this article was sent to the printer, reports of several of the investigations described herein have been accepted for publication. "Difficulty of number combinations" will be described in an article in this Journal entitled "Are Any Number Combinations Inherently Difficult?" in which Mr. Washburne and Miss Vogel will collaborate. "Grade-placement of arithmetic processes" will be described in an article by Mr. Washburne entitled "Which should we teach in Arithmetic?" and will be published in the *Elementary School Journal*. One phase of the problem of the "validity of language tests" has been described in an article entitled "Measuring Consistency," written by Mr. Washburne which appeared in the *Journal of Educational Psychology* for December, 1927. An article will appear soon in this Journal, written by Mr. Washburne and Miss Vogel entitled "A Simple Technique for Determining Whether Children Know the Meaning of Spelling Words." They have also collaborated on an article entitled "An Objective Method of Determining the Grade-Placement of Children's Reading Material," which appeared in the *Elementary School Journal* for January of this year.

A NEW CORRECTION FOR CHANCE IN EXAMINATIONS OF ALTERNATE-RESPONSE TYPE

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EVER since the advent of the objective type of examination, research students have been investigating the possibilities of certain devices for eliminating guesswork from test situations in which the factor of chance appears. Penalties of one sort or another have been proposed. For the most part, these formulas have been designed to correct for errors made in test situations where the chances for guessing the correct answer were theoretically even. The most common correction formula is

$$S = R - \frac{W}{n-1}$$

where S is the score; R, the number right; W, the number wrong; and n, the number of possible choices. In the case of alternate-response tests this amounts to deducting the number wrong from the number right.

Recent recommendations relative to the procedure in the case of tests of the alternate-response type appear to be somewhat contradictory. Dr. Ben Wood advises against the practice of correcting for guessing, while Dr. McCall holds that pupils should be directed to guess and that their scores should be corrected accordingly. In his *Improvement of the Written Examination*, Dr. Ruch states:

> It would seem entirely safe, therefore, to assume that such corrections do not improve the situation significantly. In fact, the net effect is perhaps in the other directions. The recommendation is therefore tentatively put forth that *multiple-response tests should not be corrected for chance.*[1]

However, in a later investigation, Ruch concludes:

> The evidence collected in this study points to the superiority of the method of correcting for chance
>
> $$S = R - \frac{W}{n-1}$$
>
> over the method of counting the score as the number of right answers. Whereas the evidence is not overwhelmingly on the side of correction, it is

[1] Ruch, G. M. Chicago, Scott, Foresman and Company, 1924. p. 119.

nevertheless sufficiently strong to warrant the continued use of such correction until further study shall develop a more accurate technique.[2]

The fact that the available evidence seems somewhat contradictory emphasizes the reality of the need for some simple and direct means of correcting for chance. It is the purpose of this article to present data supporting a method which appears to have possibilities. The underlying idea has been in use in experimental material prepared by the writer for a number of years, but the opportunity for testing it in a specific manner has only recently arisen. The idea involved is similar to that proposed by Mr. Arnold Christensen in his article, "A Suggestion as to Correcting Guessing in Examinations."[3]

The fundamental difference between the regular true-false examination and the type proposed in this article lies in the nature as well as in the arrangement of the exercises. The usual true-false examination consists of a series of single statements covering each specific point to be tested arranged in random order. The proposed improved true-false examination consists of a series of points to be tested covered by true-false statements so worded as to approach each point from a true as well as a false direction. To illustrate, the point to be covered is Lincoln's relationship to the Emancipation Proclamation. Exercise A, a false statement, might read, "Lincoln refused to assume responsibility for the freeing of slaves by the Emancipation Proclamation." Exercise B, a true statement covering the same point, might read: "Lincoln accepted full responsibility for the freeing of the slaves by his signature of the Emancipation Proclamation."

In the organization of this material, the usual random order of arrangement of the first series of exercises should be followed, and similarly, closely related exercises should be separated as far as possible to prevent a memory carry-over. In the double true-false exercises furnishing the data for this article the fifty points are arranged in random order which makes an equal number of true exercises and false exercises in the first half of the test, namely, the first 50 statements. In the second half the exercises are exactly

[2] Ruch, G. M., *et al. Objective Examination Methods in the Social Studies.* Chicago, Scott, Foresman and Company, 1926. p. 88.

[3] *Journal of Educational Research,* 12: 370-74, December, 1926.

reversed. In the examination, Exercise No. 51 is a true statement of the same point covered in Exercise No. 50. Exercise No. 100 is a false statement of Exercise No. 1 which is true. This arrangement was followed in this test to simplify the scoring of the pairs of exercises.

TRUE-FALSE EXAMINATION

Directions: Examine each statement below and decide whether it is true or false. If the statement is true, underline *True;* if the statement is false, underline *False.* **Do not Guess.** This examination will be corrected for guessing.

1. Teachers should more and more be held responsible for the specific location of the weakness of their pupils..... True False
2. The chief purpose of standard tests is to discover and hold up for criticism the teacher's faults..... True False
3. Educational test results represent ends in themselves..... True False
4. The World War marked the beginning of a new interest in educational measurements . . . . True False
5. The validity of a measure of achievement by a test depends entirely upon the person who administers it..... True False
6. Measurement of achievement should precede supervision of teaching method . . . . True False
7. Measurement in education is in general the same as measurement in the physical sciences..... True False
8. A teacher's grade is more accurate than a test score..... True False
9. Time and length are both important factors in the reliability of a test..... True False
10. Individual and group examinations of the same length are not equally reliable . . . . True False
91. Group tests and individual tests of the same length are equally reliable . . . . True False
92. The reliability of a test does not depend upon its length or the time required to give it..... True False
93. A score from a standard test is more reliable than a teacher's mark . . . . True False
94. Measurements in the physical sciences and in education are fundamentally different . . . . True False
95. Supervision of teaching method is independent of measurement . . . . True False
96. The personality of the individual administering a test is a factor in its validity and reliability..... True False
97. The experience in the use of testing methods during the World War tended to decrease the general interest in tests True False
98. Standard tests are to be considered only a means to an end in education . . . . True False
99. Standard tests are designed as aids to the teacher and not as means of discovering her weaknesses..... True False
100. Modern teaching practice tends to place the responsibility for the location of pupil weaknesses on the supervisor rather than on the teacher..... True False

In scoring the test the pairs are scored together. That is, in order for a student to score on Point No. 1, Exercise No. 1 must be

answered correctly as true and Exercise No. 100 as false. An error or an omission on either eliminates credit on the point. The accompanying brief excerpt from the test illustrates the principle of the arrangement of the exercises. The example includes fifty points from an examination used in connection with a course in educational measurements under the writer's direction. In these samples, Exercises 91 to 100 exactly parallel in reverse order Exercises 1 to 10. The related exercises are in this way separated from the opposite form in the earlier part of the test. Probably the best practice is to make the test in two perfectly parallel parts to be

Tabulation Sheet
for
Double True-False Examination

Name.....

Course.....

1	100	14	87	27	74	39	62
2	66	15	98	28	73	40	19
3	86	16	85	29	72	41	09
4	46	17	84	30	71	42	69
5	96	18	83	31	07	43	89
6	26	19	82	32	61	44	57
7	96	20	81	33	89	45	59
8	93	21	08	34	79	46	55
9	92	22	67	35	99	47	54
10	16	23	87	36	59	48	53
11	06	24	77	37	69	49	52
12	68	25	97	38	63	50	51
13	88	26	97				

Number Pairs O.K.....

Figure 1. Tabulation Sheet for Recording Results of True-False Examination

given at separate periods. This is being tested in a project now under way. A convenient method of scoring and tabulating the results is shown in the tabulation sheet given in Figure 1 which brings the paired exercises directly into relationship.

The double true-false test of one hundred exercises as illustrated was given to seventy-three students in a college class in educational measurements. One week later a recognition test of the controlled completion-test type covering the same points was given as a means of establishing the comparative validity of the true-false test in its various methods of scoring. The Pearson correlations computed from these results are given in Table I.

An examination of these correlations shows that the true-false test of fifty pairs corresponds to the recognition-test results at least as well as any of the other methods of scoring in which a correction for chance takes place. The difference in the correspondence of the pairs with the recognition test ($r = .640$) and the recognition test with the total one hundred exercises corrected by rights minus wrongs ($r = .618$) is not significant since the probable error of the difference of these two correlation coefficients is itself $\pm .0667$ while the difference is only .022. The computation of the reliability of the paired exercises (odds versus evens) shows that the

TABLE I

CORRELATION BETWEEN SCORES ON A TRUE-FALSE TEST AND THE CORRESPONDING RECOGNITION TEST

	Recognition Test	Pairs Right	First Fifty Pairs		Second Fifty Pairs		One Hundred Pairs	
			Right	Right-Wrong	Right	Right-Wrong	Right	Right-Wrong
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pairs right	.640	.....	.889	.869	.911	.937	.948	.895
First fifty pairs:								
Right	.592	.889	.....	.999	.842	.822	.957	.937
Right-wrong	.587	.869	.999	.....	.787	.810	.943	.934
Second fifty pairs:								
Right	.448	.911	.842	.787	.....	.999	.955	.955
Right-wrong	.605	.937	.822	.810	.999	.....	.940	.951
One hundred pairs:								
Right	.618	.948	.957	.943	.955	.940	.....	.854
Right-wrong	.602	.895	.957	.934	.955	.951	.854	.....

method of scoring by pairs correct gives a computed reliability of .924. The reliability of the one hundred paired true-false exercises (fifty pairs) computed in terms of the correlation of the first fifty corrected against the second fifty corrected is .914. This affords some basis for assuming that the correction by scoring by pairs correct is at least not subject to any serious factors affecting the reliability of the test itself.

The data here given do not prove the decided superiority of the reliability of a paired true-false test of one hundred exercises covering fifty paired points over that of a straight true-false exam-

ination of a similar total number of exercises covering one hundred specific points. This point needs investigating. The results show, however, some possibilities for a more exacting examination over a limited number of points and a simple and direct method of taking the factor of chance into account. The real value of the device will probably not be known until it is possible to subject it to a careful and extensive experimental evaluation such as Ruch has but recently completed in the field of objective examinations in the social science field.[4]

[4] *Op. cit.*, 116 pp.

ADJUSTMENTS FOR INDIVIDUAL DIFFERENCES MADE IN JUNIOR HIGH SCHOOLS

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IF "to discover the individual characteristics of pupils and to provide a more adequate education for each particular child"[1] is accepted as the general purpose of the junior high school, then the provision made in these schools for adjustment to individual differences of pupils is a fair test of the acceptance of this aim by junior high-school administrators. The phrase, "individual differences of pupils," calls to mind other equally well-worn terms—"open-air classes," "training schools for delinquents," "intelligence quotient," and "homogeneous grouping." If one provides for the crippled or tubercular by changes in physical environment, for the wayward by segregation, for the bright and the dull by placement with their kind, has sufficient adjustment for individual differences been made? Many administrators have thought so. With so-called homogeneous grouping, they thought the big problem of adjustment to intellectual differences entirely solved. Thinking educators, however, have realized that the solution of this problem of providing "a more adequate education for each particular child"[2] lies much deeper. They have given us such suggestions for improvement in adjustment as departmental organization in the junior high school, promotion by subjects, special methods in supervised study, electives, educational and vocational guidance, enriched curriculum, differentiated assignments, and methods adapted to the academic ability and interests of the individual or group.

Perhaps because the junior high school is one of our latest departures in education and has for its prime purpose the adjustment to individual needs, it is generally conceded that the tendency toward recognition of, and provision for, individual differences is most clearly exemplified in that organization. In this respect, then, our best practice should be displayed there.

[1] Davis, C. O. *Junior High School Education*, Yonkers-on-Hudson, New York, World Book Company, 1924. p. 28.
[2] *Loc. cit.*

An attempt was made to discover what is actually being done in differentiation for children of differing abilities and interests. A study was made of thirty-two replies from junior high-school principals who had been asked to state what provisions they had made to meet individual differences in their schools—curricular matters, classifications, promotions, methods of teaching, and any other procedures used.[3] Lack of mention in the replies does not mean necessarily that the particular procedure was not followed. The practice may not have been considered of sufficient importance to warrant inclusion in a report, or it may have been overlooked. It is reasonably safe to assume, however, that these suppositions are true in very few cases, but because of this doubt, a detailed or statistical study of the information given would not be justified.

Of the thirty-two schools which reported, twenty-one had some kind of so-called homogeneous grouping in one or more of the junior high-school grades. In each of three cases a statement was made that the great number of electives offered in the two highest grades prevented homogeneous grouping above the eighth grade. Two schools expressed strong opposition to homogeneous grouping on the ground that such segregation is undemocratic in principle and not conducive to best results from pupils; also that differentiated assignments within each group meet the problem of adjustment much more adequately than does mere organization.

The variety of methods used in forming these "homogeneous" groups is interesting. In only four of the schools are teachers' estimates allowed some weight; in one school, the principal's estimate is given weight; in eight schools, marks are considered—in three of these, in conjunction with personal estimates. In reports of four of the twenty-one schools which claim homogeneous grouping, no mention is made of a provision for different rates of progress; thus, achievement alone, without reference to academic ability ("intelligence"), seems to be the basis of sectioning. In the majority of cases, however, the intelligence quotient is the determining factor.

[3] The replies were made to Dr. C. O. Davis, of the University of Michigan, who kindly lent them for this study. The states from which the replies came are Arkansas, California, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Montana, Nebraska, Ohio, Oklahoma, and Wisconsin.

With the educational measuring instruments now in use and the wide range of individual differences found in every group, the homogeneous grouping striven for, whether desirable or not, cannot be attained. The realization of this fact has evidently brought about various promotional schemes to provide for easy and quick readjustment in classification. Fourteen of the thirty-two schools promote by subjects in at least two grades; five regroup pupils at any time during the school year when conditions seem to demand a change; four give special promotions only at regular promotion times, as at the end of the year or half-year. This sampling of practice seems to indicate that even in the mechanics of adjustment to varying degrees of achievement in the regular school subjects, relatively little is being done by the very schools which claim the most in adjustment provisions.

In matters of curriculum, also, the flexibility recommended by experts in the junior high-school field is not evident. Only twelve of the thirty-two schools reported the offering of electives in at least one grade. Six which did not mention electives stated that there were certain minimum requirements for all. Ten schools reported some kind of educational guidance—a most desirable feature in connection with electives. One school reported an "enriched curriculum" for the gifted child, but did not specify the nature of the enrichment—whether it involved a more intensive and extensive study of the required subjects, a heavier program of subjects than that required of the average child, or directed study on special topics of interest to the pupil which are not included in ordinary courses of study. Again, in the case of the curriculum, present practice seems far behind accepted philosophy.

Little scientific experimentation has been done with the techniques of teaching pupils of different intellectual levels. Therefore it is not surprising that there were few reports of differentiated methods. In one school, teachers make "allowances." In one school the "laboratory" method is used for the least gifted; in six schools there was reported a difference in methods, but the difference was not described. Two schools mentioned the use of projects. Five schools specified assignments differentiated according to ability and preparation of students, but in only one case was the differentiation described and that was in mere quantity of subject-matter.

Only one of the thirty-two schools reported "citizenship" emphasis for the dull.

Five principals reported supervised study as a means of adjustment to individual needs; two reported coaching for the dull. In four schools individual attention was given to all, but the nature of the individual attention was not described. Four principals mentioned opportunity rooms. Since supervised study is stressed in some of the better texts on the junior high school, it is rather remarkable that more than eighty percent of the schools here mentioned either did not follow that recommendation or consider it unworthy of mention.

Another provision for the differences in interests among pupils is the offering of clubs. Eight, or one-fourth of the schools studied, mentioned clubs sponsored by the school. It is interesting to note that whereas three-fourths of the schools which furnished information either have no clubs or consider them of too little importance to mention, one of the larger schools reported seventy-five of these organizations.

Shortened time in school, broader culture, and training for leadership are among the criteria for judging provisions for treatment of the gifted child.[4] Special promotion schemes and opportunity-class work are some of the means of shortening time in school. Only a few more than one-half of these schools, which as a class represent our best practice in adjustment to individual needs, reported either provision, and there were no substitutes offered.

For giving a broader culture to the gifted child, differentiated assignments, electives with guidance, supervised study, and club offerings are among the provisions reported. Less than three-fourths of the schools reported one or more of the provisions under this category. Training for leadership may be had in the one which reported organized classes, in the eight which reported club activities, and in the one which reported "citizenship" emphasis, although no specific mention of definite training for leadership was made.

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[4] Coy, Genevieve L. *The Interests, Abilities, and Achievements of a Special Class for Gifted Children.* New York, Teachers College, Columbia University, 1923. p. 8. (Teachers College, Columbia University, Contributions to Education, No. 131)

If these schools, which claim the leadership with regard to giving the particular child the education which he, as an individual, most needs, appear to provide so inadequately for the accomplishment of that purpose, what can we expect of the rank and file? Or, is it still true that "junior high school" is a name for an organization of three grades rather than for an idea or philosophy?

THE VALUE OF PICTURES IN TEACHING HISTORY

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THE GREAT wealth of pictures available today through the press and through the art departments of public libraries forces upon the teacher the question of the value of these materials in teaching. Pictures are often presented in books and magazines simply because they are interesting, because they break the monotony of the page, or because they may help the reader better to understand and remember certain facts. The chief interest of this paper is to determine how well pictures accomplish the purpose of helping pupils to master certain sorts of subject-matter.

The problem is to compare the effectiveness of verbal presentation with the effectiveness of verbal presentation plus pictures, not verbal presentation with unexplained pictures. The problem may be set in the questions: Does the presence of pictures make the chief thought more vivid and lasting than words alone do? and Are all pictures of equal value as visual aids? These problems are of vital concern to the teacher, to the author of the textbooks, and to the pupil.

To answer these questions an experiment was conducted in two second-year high-school classes in modern European history which were studying the life of Napoleon. Previous experiments with visual aids in geography and history had suggested the need of this study and had pointed the way toward a better technique than that previously used.

Both classes were given the Terman Group Test of Mental Ability for Grades VII to XII. In Class I the thirty pupils made scores ranging from 80 to 187 (median, 135; $SD_{mdn.}$, 30.4), and in Class II the twenty-seven pupils made scores ranging from 86 to 198 (median, 137; $SD_{mdn.}$, 30.9).

The plan for the training exercise and the test to follow was explained to Class I and to Class II. All the 22 paired phrases of Group I were presented on the screen to Class I with the pictures, that is, "picture plus verbal" instruction. The 22 paired phrases of Group II were presented to Class I without pictures,

that is, simply "verbal" instruction. The order of procedure was to display a paired phrase from Group I with a picture, and then a paired phrase from Group II without a picture, another from Group I with a picture and another from Group II without a picture, etc., until all paired phrases were shown.

The first picture showed the young Duke d'Enghien standing in the courtyard of a French castle at midnight, about to be executed by the order of Napoleon. The dim rays of a lantern disclosed the stooped forms of five soldiers who were leveling their long rifles ready to fire. To one side stood the little drummer boy accompanied by his dog. At the feet of the young Duke yawned an open grave ready to receive the victim. Below the picture were the two phrases of verbal instruction, "Duke of Enghien—shot by five soldiers." Following this picture two phrases were presented without a picture, "Invalides, Paris—tomb of Napoleon." In this way each of the twenty-two pictures of Group I were alternated with each of the twenty-two verbal presentations of Group II, one half-minute being allowed for each showing.

The twenty-two paired phrases of Group I and the twenty-two paired phrases of Group II follow:

GROUP I

Division A:

12. Duke of Enghien—shot by five soldiers
13. Napoleon on hunt—meets Pope Pius by roadside
14. Joachim Murat—curly-headed cavalry leader
15. Elise Bonaparte—oldest sister of Napoleon
16. Battle of Eylau—snow and confusion
17. A bitter memory of the past—Napoleon on board the ship for Elba
18. Badge of the Legion of Honor—given disabled and deserving
19. Napoleon's dress—epaulets, peculiar shaped vest
20. French burn flags—retreat from Moscow
21. Consuls—Bonaparte, Cambeceras, Lebrun
22. Bomb explosion—royalist plot to kill Napoleon

Division B:

12. Coup D' Etat—soldiers drove assemblymen out windows
13. Marengo—Napoleon turns back a retreat
14. Monks on top of Alps—food to weary soldiers
15. Crossing the Alps—a great engineering feat
16. General Blucher—Prussian leader at Waterloo
17. French stragglers in Russian campaign—killed by peasants
18. Battle of Wagram—Napoleon surveying battlefield through telescope
19. Waterloo—generals and Napoleon swiftly retreating
20. Napoleon's appearance after thirty—short and fat
21. Trafalgar—battle on the sea
22. Bautzen, Saxony—Napoleon studied campaign by torchlight

GROUP II

Division A:

1. Invalides, Paris—tomb of Napoleon
2. Battle of Friedland—dashing cavalry
3. Napoleon's favorite division before Waterloo—the Old Guard
4. Lutzen—Napoleon dashes forward on a white horse
5. Napoleon's royal carriage—carved and gilded
6. Army in Poland—weather drizzly and cold
7. Battle of Ulm—Austrian army moves up in columns to surrender
8. Battle of Ulm—Mack surrenders to Napoleon
9. Dinner at Tilsit—Napoleon gives Louise a rose
10. Treaty of Tilsit—signed on a raft
11. Hegel a German philosopher—Napoleon at Jena

Division B:

1. Iron crown of Lombards—worn by Napoleon
2. Bridge of Bersina—Russian attack drove French into river
3. Smorgoni in Russia—Napoleon abandoned his army
4. Moscow—Napoleon leaves as raging fires destroy
5. Battle of Essling—around a grainary
6. Council of generals at Gorodya—Napoleon urged to retreat
7. French army under Junot—in mountains of Portugal
8. French army surrendered—Bylen
9. Napoleon and Alexander study map of Europe—Tilsit
10. Queen of Prussia—very beautiful
11. Campaign of France, 1814—roads rutted, ground snow-covered

The phrases were next shown to Class II, but this time pictures were presented with the phrases of Group II rather than Group I as before. The phrases of Group I without pictures were alternated on the screen with those of Group II with pictures. "Invalides, Paris—tomb of Napoleon" was shown first and with the words a view of the inside of the Invalides. In the center of a circle of flags and statues beneath the middle of the big dome, the sarcophagus of the great French general stood, carved out of stone as black as ebony. After the picture the phrase, "Duke of Enghien —shot by five soldiers," was shown without illustration. Thus the twenty-two paired phrases of Group I and Group II were alternated as they had been with Class I.

The same test was given to both classes. It was made up of two divisions, A and B. The A division was composed of the first eleven pairs of phrases of Groups I and II and the B division was composed of the last eleven pairs of phrases of Groups I and II. The first halves of the phrases of the A division were listed in the order presented on the screen, as, Duke of Enghien...., Napoleon on hunt...., but the second halves were disarranged. The problem of the test was one of matching, that is to take the proper

phrase from the disarranged group to match each of the phrases of the given list. The same procedure was followed with the phrases of the B division. Scoring the answers was easy and clearly objective since each answer was entirely right or wrong. The results are given in Table I.

On each of the 44 questions there were 57 answers. Of the 1,254 possible correct answers to the picture matchings, 692 were correct or .55; and of the 1,254 possible correct answers to the verbal pairs, 591 were correct or .47. The difference in favor of picture-plus-verbal presentation over verbal presentation alone was .08.

TABLE I

RESULTS OF EACH GROUP ON THE FINAL TESTS

	Number of Pupils	Number of Questions	Possible Number Correct	Correct Answers	Percent Correct
(1)	(2)	(3)	(4)	(5)	(6)
Pictures:					
Group I	30	22	660	352	.....
Group II	27	22	594	340	.....
Total	57	44	1,254	692	.55
Verbal:					
Group I	30	22	660	334	.....
Group II	27	22	594	257	.....
Total	57	44	1,254	591	.47

Two conclusions may be drawn from these data. First, pictures in most cases help more than they hinder in the verbal presentation of materials of the nature described above and in situations as stated. Second, pictures are sometimes of little or no aid in presenting verbal material and at times may be a real hindrance. It was hoped that the experiment might help settle the question. When are pictures a help and when are they a hindrance to learning? but no safe conclusion can be drawn from these data. However, the procedure used may be suggestive of a method of investigating this problem.

A SOURCE OF WASTE IN THE PROFESSIONAL TRAINING OF TEACHERS

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A GREAT deal of complaint has been made that the modern college student is indifferent toward his studies and that he has an excessive amount of time for extra-curricular activities.[1] He is accused, in short, of a tremendous underestimation of his opportunities. The assumption is, of course, that the youth is entirely at fault. May I suggest that we, as college teachers, are partly to blame; that perhaps we waste as much of the student's time as he does himself; that he is indifferent to the use of his time because we are indifferent to its value; that he has an excessive amount of time and energy for outside activities because we do not give him profitable assignments in connection with his class work? Certainly one of the greatest sources of waste in the professional training of teachers is the teaching of that which is already known.

The data presented in this paper have been gathered from six institutions, teachers' colleges and universities offering only undergraduate work, and large universities giving graduate courses in education. With each of these types I have had intimate personal contact. The facts have been confirmed still further by incidental conversations with students and faculty members and by the study of college and university catalogues. Practices such as those to which I shall call attention are not in any way local, nor are the matters peculiar to any one college or department. This discussion, however, is particularly concerned with colleges of education.

A student may secure knowledge of a subject from several sources before he enrolls in a course dealing with that subject. He may, in the first place, have found similar content in other courses in the same department. For example, a certain university student received credit in three different English courses for reading the same book, in two of which courses it was required; and it had been among the books which she had studied in her junior year at high school. In another case, the same textbook was used for a

[1] Read before the National Society of College Teachers of Education at Dallas, Texas, February 28, 1927.

course in college agriculture that was used as a high-school textbook. Perhaps the complaint that too many required professional courses keep the student from an adequate preparation in the subject-matter he is to teach may be offset by evidence that the time spent getting this subject-matter is not well used.

In a certain large graduate college of education, about fifty percent of the required reference reading was the same for two different courses given during the same term. It is admitted that most references can be read repeatedly with profit; but, when the same reference is given at the same time in two courses it is *not* read twice, be the student a Freshman or a candidate for the doctorate.

A course in school administration in another college of education, was given during the winter by a resident member of the faculty and to many of the same students—under a different title but with the same textbooks and outlines—the next summer session by a "practical school man." It is difficult, particularly in large departments, for each instructor to know just what each other one is doing, and a man of great repute, when he joins a new faculty, can hardly be asked to conduct sections of courses already organized. He naturally wants to present his own course, and does so, even though it varies little from courses already provided.

A second source of duplication within a department comes from a lack of organized sequences of courses. Whether or not any particular course is necessary to success in another is, perhaps, debatable. The desirability, however, of being able to assume a certain background seems hardly open to question. In a certain class in child psychology, one student was found for whom this was the first course in the department, and another student, for whom it was the eleventh course. In a second college of education, the students in educational psychology were about equally divided between those who had had one-half of a two-term course in general psychology and those who had had the whole course. In a third college, 4 percent of those in educational psychology had had no previous course in the department; 53 percent, one course; 25 percent, two courses; 16 percent, three courses; and 4 percent, four courses. The courses which the 53 percent had had, included general psychology for four, five, or nine hours; analytical psy-

chology; child psychology; or social psychology. Under such conditions the subject-matter of the new course is inevitably much more familiar to some members of the class than to others.

Not only is there duplication within a department, but there is also a tendency for professional training to overlap professional experience. Teachers in service acquire considerable professional information and skill, yet there seems to be relatively little effort toward adjusting our education courses to the experience of the student. About 18 percent of the students enrolled in a certain course in education for the regular term had had teaching experience—a number large enough for a good-sized section. On the other hand, 74 percent of those enrolled during the summer term had taught—49 percent of them, for three years or more. During the winter, from 55 to 65 percent of the class consisted of underclassmen; in the summer, about 80 percent of the class were upperclassmen, and 16 percent of those, graduate students. No attempt was made, however, to gather together those who had or had not taught, nor was the syllabus for the summer course in any way different from that used in the winter. Certainly, it was a "snap" course for some students.

Similarity of content in the work of different departments constitutes a third and large general source of what students already know. Some of the data as to sources of pre-information, presented in this connection, are not clearly differentiated, but most of them will be seen to come through overlapping between departments. In one institution I asked the members of a large class in educational psychology to indicate in what courses, outside the department of psychology, they had encountered discussion of topics treated in the present course. The resulting list indicates that there were at least twenty-six such courses which dealt to some degree with topics discussed in educational psychology. In some of these courses there were only a few topics in common; in others, many. Such topics as habit and instinct are apparently treated in numerous courses.

Dr. Judd wrote, in 1923, of the curricula in teachers' colleges:

> There is another intolerable normal course. It is the empty repetition of a few platitudes about teaching, classified first under the head of Methods, then repeated under the head Principles of Education, gone over a third time under

the title Class Management, and finally glorified in the last repetition under the title Philosophy of Teaching. Unless the teacher-training institutions of this country can find more productive content than is now administered in many of their professional courses they cannot justify their expansion.[3]

In spite of Dr. Judd's warning, not only are courses bearing these or similar titles found in profusion in some of the colleges of education of our largest universities, but a fifth course of the same sort has been added, namely, introduction to education. Nor is the repetition confined to platitudes on teaching. Statistical methods, the practice curve, investigations of reading ability, problems of curriculum construction, and so on have also attracted the attention and interest of numerous instructors. A cursory survey in one college showed that a student might be trained in elementary statistical techniques through general psychology, educational psychology, mental measurements, educational measurements, principles of education, and school administration.

In one college, at least, candidates for certain teaching certificates are required to enroll for introduction to teaching, educational psychology, principles of education, classroom management, and fundamentals of kindergarten and primary education. All of these courses treat of instinct, habit formation, the laws of learning, individual differences, intelligence, and emotion. Four of these six topics are taken up in educational sociology—also a required subject. In addition to these "theoretical" courses, the student applies his knowledge of these topics, often after purely formal reference work, to courses in methods, student teaching, and so on. I have found students in classes in educational psychology to whom subject-matter on the laws of learning, the practice curve, individual difference, and so on was being presented for the sixth time.

In one college it was found that for required courses in educational psychology and principles of education the same text was being used. In another college, a text which was used for one required course was assigned, almost in its entirety, as reference reading for another such course.

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[3] Judd, C. H. "What Should Be the Minimum Essentials of a Four Year Curriculum for Teachers' Colleges," *School and Society*, 18: 61-67, July 21, 1923.

Perhaps we understand better now why the correlation between college marks and the score on an intelligence examination is not higher. The student who gets the highest marks is, possibly, the one who has studied the subject in the most courses.

I presume that some readers will say, "Well, even if they do repeat these things several times, they don't know them." I have some evidence on this supposition, too. A final examination, of objective nature, was given to students just entering a course in educational psychology, and 22 percent made scores equivalent to a passing mark. At another college, the final examination given in the first semester in classroom management was given to students entering the same course the next semester. Most of these students had just finished a course in introduction to teaching, under another instructor. Fifty-five and one-half percent of these entering students made a score equal to, or better than, that required for a passing grade the previous term. In a course in principles of secondary education, where a similar experiment was tried, ten out of ninety students, or 11 percent, made a passing mark on the examination before beginning the course. Some of the questions on these examinations were answered by all of the entering students. All examinations were objective, and none of them was confined to one type.

This leads to a fourth source of overlapping. One reason why so many students receive high scores before taking certain courses is indicated in the quotation from Dr. Judd. We are still taking up too much time expounding platitudes. One man expressed it thus, after noting that his entire class at the beginning had answered correctly a question which he had included in his final examination, "Well, any man on the street could answer that right." Two of the persons who, before taking the subject, got a passing score on the final examination in classroom management had had no work in education before. To get at something of the extent of this overlapping on common sense I asked some of my colleagues to give to their classes in principles of secondary education, Odell's Standardized Achievement Test on Principles of Teaching in Secondary Schools. This is an objective test which includes four types of exercises—none of them true-false—and has a possible score of 72. The test was given to classes just finish-

ing the course and also to those who were beginning it the next semester. The median score for those who were finishing was 41, while those who had not yet started it made a median score of 37—a difference of only 4 points. Moreover, the median score for the beginners was 51 percent of the total possible. And still further, 21 of the 72 items of the test—about 30 percent—were known by three-fourths or more of the students before taking the course—the number of cases finishing and beginning respectively, was 50 and 58.

A similar test was made using Frasier and Armentrout's Standardized Examination, Form B, on their book *Introduction to Education*.[3] This examination, which consists of 150 true-false questions, was given to those just completing and those just beginning a course in principles of elementary education. None of the students had had a course in the introduction to education, and the course in principles was chosen as being the one most likely to include the material dealt with by Frasier and Armentrout. Sixty-two students just finishing and eighty-six just beginning the course, took the test. The beginning students generally omitted the questions with which they were completely unfamiliar but still, the papers being scored rights minus wrongs according to the directions, they made a median score of 67, or nearly 45 percent of the number possible. An examination of the number of times particular items were answered correctly also proves interesting. I arbitrarily assumed that any question answered correctly by three-fourths of the class was sufficiently known to be significant. Ninety-four of the one hundred fifty items were known by three-fourths or more of those finishing the course. Sixty-four of these same ninety-four items were known by three-fourths of the students before taking the course. In other words, 68 percent of what, according to the test, was known at the end by one group was already known by the other group before the course began.

While it is, of course, by no means entirely true, I should like to contend that a large part of the pre-knowledge revealed by these two studies results from an overlapping on common sense. It is

[3] Frasier, Willard G., and Armentrout, Winfield, D. Chicago, Scott, Foresman and Company, 1924. 274 pp.

not strange that students do not need to take a semester's course in order to answer, true or false, such questions as: "Education should prepare an individual to carry at least his own load," or "Many teachers fail because of poor discipline"; or to underline the proper word in a statement such as "Assignments should (ignore, omit, mention, give help on) points of unusual difficulty"; or to correct such a sentence as "General culture is not a legitimate aim of high-school education." How much space in textbooks, classes, and examinations can we give to material which is common knowledge to the layman?

There is still one other phase of this matter of the waste of the students' time which I should like to consider. We not only include in our course material which is already known but, seeing it is there, we give it quite as much attention as that which the students do not know.

At my request a ninety-item objective examination in educational psychology was given to 238 students just beginning the course and to the same students at the end of the semester's work. The instructors did not see the results of the first test. The test was tabulated item by item. The outstanding fact of this study was that, generally speaking, those items which were unknown at the beginning of the course were still unknown at the end. The examination was in four parts. That part on which the lowest average score was obtained at the beginning of the course had a final average score 13 percent lower than that of the next highest division at the start. The lowest twenty-five of the ninety items, at the beginning of the semester had, as a result of the course, a median increase of only 3 points more than did the highest twenty-five items. (We remember, of course, that equal instruction would tend to produce an increase of a greater number of points on those items initially low as they are further away from perfection.) The median of these lowest initial twenty-five items was at the end of the course 30 points below that of the highest twenty-five items at the beginning. The conclusion seems to be, then, that those matters upon which any instruction at all was given were given about the same amount of attention regardless of the degree to which they were already known.

I have shown that some content is repeated over and over again within and between departments; that because of this repetition and because of pre-information acquired professionally and from common sense, students do actually make high scores on examinations in courses prior to the formal pursuit of them; and that, moreover, there is a tendency to give equal attention in instruction to that which is and to that which is not known. Shall we not attempt to give students more opportunity for the profitable use of their time?

THE EFFECT OF PRACTICE ON THE IMPROVEMENT OF SILENT READING IN ADULTS

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THE EXPERIMENT here reported was performed by a group of sixteen adult women—Seniors in the college department—to determine whether systematic practice in rapid silent reading, distributed over a period of several months, would materially affect the regular rate of reading. The experiment was carried on during the months of March, April, and May, 1926, with three forty-minute practice periods per week. Tests, given at the beginning, middle, and end of the experiment, consisted of selections from Emerson's essay, "Eloquence," and the Thorndike-McCall Reading Scale. Speed was determined by averaging two two-minute readings from "Eloquence." Comprehension was tested by two methods, the first of which was an adaptation of the Thorndike-McCall scale.

To adapt this test to the ability of senior students, an arbitrary time limit of six minutes was set, instead of allowing thirty minutes. It is recognized, of course, that this is not a real test of the comprehension of college Seniors, but in the absence of standardized tests for this level some improvising was necessary. The results cannot, therefore, be compared with the standards given for the Thorndike-McCall scale, but they may be of value for purposes of comparison within the group. The second method of testing comprehension consisted of the principle employed by Starch in his reading scales, namely, of reproducing the material read in the speed tests and counting the number of words thus reproduced.

Throughout the entire experiment the factors influencing the development of silent reading were emphasized, and each subject was urged to keep them in mind during the practice periods. These factors, as outlined by O'Brien and used by him in his experiment with Illinois school children to determine the improvement in silent reading effected by training are as follows: (1) practice in rapid silent reading, (2) decrease in vocalization, (3) training in perception, (4) character of subject-matter, (5) habits of eye-

movement, (6) purpose for which the subject-matter is read, (7) concentration of attention, (8) ability to grasp the content, (9) recognition of the value of rapid reading, (10) will to read rapidly, (11) pressure of a time control, and (12) keeping records of progress.[1]

TABLE I

SPEED IN WORDS PER SECOND AT THE BEGINNING, MIDDLE, AND END OF THE PRACTICE SERIES

Subject	First Test	Second Test	Third Test
(1)	(2)	(3)	(4)
1	5.6	7.2	9.6
2	5.1	.....	4.7
3	4.4	.....	9.8
4	2.1	3.7	8.2
5	3.9	7.0	8.7
6	3.4	5.9	10.1
7	2.9	5.5	10.3
8	6.0	8.6	9.5
9	5.0	5.2	8.5
10	3.5	5.7	6.7
11	4.2	.....	7.7
12	6.1	8.7	9.5
13	4.6	.....	10.5
14	3.7	4.0	3.9
15	3.3	5.0	9.5
16	4.2	5.4	7.7
Average	4.2	6.0	8.4

Gain—4.2 words per second, 99 percent.

The practice material was taken from various standard works of literature. In order that the reading might be done with concentration of attention and a maximum of speed, the practice periods were broken up into ten-minute units, after which each reader reproduced, in her own words, as much as she remembered. Each person kept a daily record—in graphic form—of her speed and comprehension.

[1] O'Brien, J. A. *Reading: Its Psychology and Pedagogy.* New York, Century Company, 1926. pp. 247-57.

Table I gives the results of the experiment with regard to the effect of practice on increasing the speed of reading. The speed of reading has increased 4.2 words per second, or 99 percent, practically double the original rate. Only two of the subjects, Numbers 2 and 14, failed to improve under practice; seven doubled; one trebled; and two quadrupled their speed. The remaining four made substantial gains.

TABLE II

COMPREHENSION, IN TERMS OF T-SCORE, AS MEASURED BY THORNDIKE-MCCALL READING SCALE

Subject	First Test	Second Test	Third Test
(1)	(2)	(3)	(4)
1	65	71	66
2	37	.....	41
3	59	.....	55
4	55	56	56
5	53	53	51
6	61	59	60
7	45	49	56
8	74	60	58
9	77	67	64
10	59	53	56
11	69	.....	56
12	74	67	61
13	45	.....	56
14	59	58	58
15	55	56	56
16	55	51	46
Average	58.8	58.3	56

Tables II and III present the figures on comprehension. The former gives the results of the Thorndike-McCall Reading Scale. Here no gain in comprehension is registered; in fact, there is a slight decrease in the T-score. As previously stated, the method of allowing six minutes on this test does not allow enough time for making fine discriminations in ability to comprehend. On the other hand, if much more time had been allowed, all the subjects would probably have answered all the questions and hence no discrimination would have been made. Forms 1, 2, and 4 of the

Thorndike-McCall Scale were used for the first, second, and third tests, respectively.

The fact that the best average T-score was made on the first test and the poorest on the last might indicate that the enormous gain in speed was accomplished at a sacrifice in comprehension, if the evidence gained from the second comprehension test—shown in

TABLE III

COMPREHENSION, IN TERMS OF WORDS REPRODUCED AFTER TWO-MINUTE READINGS OF SELECTIONS FROM EMERSON'S "ELOQUENCE"

Subject	First Test	Second Test	Third Test
(1)	(2)	(3)	(4)
1	216	165	255
2	138	.....	187
3	204	.....	173
4	63	111	115
5	119	132	162
6	117	116	132
7	130	141	155
8	150	135	130
9	100	140	139
10	198	144	193
11	123	.....	192
12	198	120	139
13	159	.....	168
14	120	75	171
15	184	116	119
16	95	155	130
Average	144.6	129.2	160

Gain—15.4 per second.
10.6 percent.

Table III—did not negate this conclusion. Here a gain in comprehension of 15.4 words, or 10.6 percent, for the two-minute period is shown.

These two tests of comprehension show that the development of speed in reading does not necessarily carry with it as a concomitant the development of comprehension. Practice in comprehension of reading-matter is just as necessary as practice in speed

of reading. This experiment was concerned largely with the development of speed, but the factor of comprehension was included as a safeguard to purposeful reading and as a check to determine whether increase in speed was gained at a great sacrifice of comprehension.

It is of interest to note that the findings of this experiment closely parallel those of O'Brien. He found that there was a gain of 56 percent in speed for all grades—IV through VIII—in his experimental group, while the comprehension remained constant. With regard to comprehension he says:

The conclusions that would seem to follow from the performances of the pupils in comprehension in this study are:

1. Marked increase in the speed of reading may be effected without any impairment of the comprehension.
2. The setting up of habits of rapid reading does not per se increase the accuracy of the comprehension.
3. To secure marked improvement in accuracy of comprehension special stress must be placed upon training designed specifically to increase the accuracy of the comprehension.[2]

SUMMARY

The general conclusions to be drawn from this present experiment are: By systematic practice in silent reading, during which the factors in efficient silent reading are constantly borne in mind, adults can enormously increase their speed of reading. The sixteen subjects included in this study made an average gain of 99 percent, or practically doubled their former rate. Comprehension is not appreciably affected either way as a result of enormous increase in speed. Increase in the speed of reading does not carry with it as a necessary concomitant an increased ability to comprehend. The way to increase comprehension is to give special training in comprehension.

[2] *Ibid.*, p. 287.

EDITORIALS

"EDUCATION—A PSEUDO-SCIENCE"

MEN interested in research are committed to appraisal as a fundamental human activity. They are ready to survey and appraise anything and everything under the sun; less frequently do they appraise their own thoughts and work. We who are committed to research in education have the same predilection. Perhaps we should do well to apply our specialized methods to taking stock of ourselves.

It is about fifty years since man established the first laboratories for the scientific study of human nature, about forty years since the beginning of intelligence testing, about twenty years since the mental-age concept was clearly formulated and about fifteen years since the publication of the first standardized measure of educational products. Unnumbered millions of mental and educational tests have been given, whole libraries of books on tests and statistics have been written, endless meetings and conferences have been held, and thousands of experiments have been conducted. What is the net outcome? To what stage of development have we attained?

If we study the transition from an art to a science in any field of human endeavor, in astrology or alchemy, for instance, we can distinguish four general levels or stages. The first is action and explanation based on crude, natural, common-sense observations. During this stage the major elements in the field become isolated in consciousness, and folklore explanations gradually accumulate to satisfy the natural demand for understanding.

Eventually, however, the folk tales stimulate in exceptional individuals a higher form of curiosity. Systematic observation begins. It is biased observation, however. The investigators select data in terms of their preconceived notions and rationalize in terms of their selected data. They even invent what are apparently measuring instruments and experimental techniques. Ob-

servations multiply and theories, also. Controversies arise; investigation and publication are carried forward at a feverish pace. The beneficial consequences are that the minds of many are trained to a new point of view, and many data are accumulated which later prove of real value. But, judged as impersonal verifiable enduring truth, the net gain during this stage is small.

Finally, a time comes when the mass of data and conflicting views and theories serve as a stimulus to still higher types of curiosity and discontent. Investigators rise above their preconceptions, and careful analytical search of pertinent experience soon reveals truly elemental factors. New terms, new methods, new measuring instruments make their appearance, and ultimately, demonstrable truth prevails. Thus development enters its third stage and becomes a crude but true science yielding enduring knowledge, basic laws, and certain control.

The fourth stage is the golden age of science. Measurement is refined to the *n*th degree; techniques are perfected and standardized. The entire field is mapped out, knowledge is systematized, potentialities are developed, and control is based on exact knowledge applied in service to the common good. The science achieves a position of prominence and respect. Its yield of new truth is continuous and certain; its benefits, wide spread.

If now one asks, "In what stage is the science of education?" the answer must be "the second," or the stage of biased observation and uncritical acceptance of assumptions. We have measuring instruments of a sort, but no means of interpreting the results of our measurements except in terms of assumptions which have not been proved to fit the conditions. We speak of ability, capacity, nature, nurture, although none of these concepts is more than vague suggestion of obscure trends. Who is able to define ability in any helpful way? Who has demonstrated beyond doubt that the doctrine of specificity is better than the general and specific factor theory, or than any other? We have statistical procedures and experimental techniques, it is true, but statistical analysis alone is inadequate to establish natural law. Who ever heard of experimentation in education which conformed sufficiently to the law of the single variable to enable two investigators to obtain identical results? Even repetition of educational experiments by different

observers is seldom attempted because each investigator can find so many flaws in the procedures of his predecessors that he would consider it a waste of time to repeat their mistakes. Perhaps the best indication of the elementary stage of our thinking is the fact that the definition in quantitative units of teaching itself has never been attempted. If two boys, aged ten, have each been in school six years and in that time one has passed through three grades and the other through eight, how many units of instruction has each received? Shall we measure instruction by elapsed time, by opportunity, by quality, or by some still more significant, but unknown, characteristic?

The truth of the matter is that our tests are merely devices for stimulating specific forms of behavior, and our scores are merely crude indexes for expressing individual differences in behavior. We have not yet identified what it is that is measured by any test. We have a concept of validity, but no tests sufficiently valid to enable practical prediction and control of individual behavior. We talk learnedly of reliability and compute it by many lengthy formulas based on assumptions whose appropriateness to the test situations we have not demonstrated, but we neither know nor control the causes of unreliability. We have no science worthy of the name, and no prospect of developing one so long as we refuse to face the inadequacy of our present results and the non-scientific character of our many rationalizations. We grow hilarious when we read of the absurdities and intolerance of the alchemists and astrologers of by-gone ages, but we ourselves ape them as closely in spirit and results as the changes in our social customs permit.

The stage through which we are passing has served a good purpose. Today, thousands of workers are trained to a scientific point of view and are ready to use the new methods of control as soon as they are discovered. What Copernicus did for astronomy, what the skeptical chemist did for alchemy, that some modern leader will yet do for education. Our critical standards have been too low. We have deceived ourselves into considering our progress to be on a higher level than it really is. The challenge of the opportunity before us is as vast as it is unperceived by the rank and file of those in education whose intent is to be scientific.

S. A. C.

NEWS and COMMUNICATIONS

Dr. John Roscoe Turner, dean of Washington Square College of New York University, has been elected President of West Virginia University to succeed Dr. Frank B. Trotter.

Dr. E. J. Ashbaugh, of the Bureau of Educational Research, Ohio State University, spent the Fall Quarter travelling through the South and visited, in the course of the trip, many of the southern colleges and universities.

The University of Chicago Press publishes Diagnostic Tests in the Fundamental Operations of Arithmetic and Problem-Solving by Reavis and Breslich, of which two forms are available. There are ten tests in all, eight on the fundamentals including decimals and two on problem solving. Standardized-test technique is used in presenting the tests to the pupils.

The *English Journal* is publishing the Chicago Practice Tests for Mastery of the Mechanics of English. There are fifty-six sheets in all, about half of which are practice sheets and the other half correction and test sheets. These tests have been prepared by Sophia C. Camenisch and are for use in the ninth grade particularly.

Two of the recent issues of the "University of Iowa Extension Bulletin" contain courses in English, one for junior high schools and the other for senior high schools. In both of these bulletins the objectives for each grade are set up, and the year's work is outlined by weeks. Each pamphlet was prepared by Dr. M. F. Carpenter, a member of the staff of the University High School.

The Program Committee of the National Society of College Teachers of Education has prepared an interesting program to be presented at Boston during the Department of Superintendence Meeting on February 27 to 29. The program for one session is arranged about the central theme, "Where does one go for fundamental assumptions in education?" Four educators will speak on this central topic under the captions of "To the philosophy of education," "To the history of education," "To educational psychology," and "To educational sociology."

The Palmer Company is publishing the Tyrall Geography Exercises, consisting of fifteen tests distributed as follows: six on the United States and its possessions, three on North America as a whole, two on Asia, and one each on South America, Europe, Africa, and Australia, and the Pacific Islands. Each exercise consists of fifty completion sentences each representing a geographical fact concerning the country under consideration.

Dr. C. C. McCracken, of the Department of School Administration, of Ohio State University, has been granted a leave of absence for one year, effective January 1, 1928, to accept an appointment as Research Counsellor in the Department of Colleges and Training Schools under the Board of Education of the Presbyterian Church in the United States. This Board has under its control fifty-four colleges scattered throughout the United States. The main purpose of the Board of Education in this appointment is the redefinition of the objectives and functions of the denominational colleges in the light of their contribution to the church. Dr. McCracken previously directed a complete survey of the colleges under the control of the United Presbyterian Church and also served as a member of the Committee on Higher Education of the United States Bureau to survey the negro colleges in the United States.

The American Council Alpha German Test consists of two parts, Part I for measuring ability in vocabulary and grammar, and Part II for measuring ability in silent reading and written composition. The Vocabulary Test consists of one hundred German words, chosen at regular intervals from Kaeding's Word Count based on more than ten million running words. The Grammar Test is designed to measure functional grammar. In both of these tests the multiple-response technique is used. The Silent Reading Test consists of seven paragraphs of increasing difficulty, with questions in German to be answered in English. The students are required to write a story about a picture for the Composition Test. The tests were prepared by the Modern Foreign Language Study and are published by the World Book Company.

The American History Test of the Columbia Research Bureau, for use in high schools and beginning college classes, consists of 200 items grouped in four parts: a true-false section of 80 items, a matching test of 50 items, a multiple-choice test of 50 items, and a completion test of 20 sentences. About half of the questions relate to post-Civil War times. Under another classification, about half the questions are political in nature, about one-fourth are economic, about 15 percent social, and 10 percent educational and religious. High reliability and validity are claimed for the tests. They are published by the World Book Company.

The Department of Educational Investigation and Measurement of the Boston public schools has recently issued a comparison of the scores received on the Boston Research Tests in Common Fractions by the pupils of Grades VI to VIII, inclusive, at the close of 1927 with the standards established from the results of the same test given in 1919 and 1920. More than twenty-eight thousand pupils took these tests in May of last year. Five tests were given, each of which was scored on the basis of speed and accuracy, making a total of ten scores for each of the grades. Out of the thirty scores in the three grades, gains were made on only six, four of which were in accuracy; while eight showed no change from the standards established on the basis of tests given in 1919 and 1920. In no case did either the gain or the loss seem to be particularly significant.

Under the direction of the Division of Research, a battery of educational tests was given to all pupils in Grades IV-B to VIII-A, inclusive, in the public schools of St. Paul, Minnesota, during May, 1927. The tests used were: Monroe Silent Reading Test, Revised; Holley Vocabulary Scales, A and B; New York Survey Test, Parts I and II; Buckingham Reasoning Test in Arithmetic; Pittsburgh Arithmetic Scale; and Pressey Attainment Scale. A comprehensive analysis of the scores obtained on these tests has just been issued. The results of the tests have been compiled into standards for levels of both age and grade. These standards, designated as the B-scores, have been arranged in one chart which is called the educational-age chart.

Under the direction of the Department of Measurements and Research, of the public schools of Lincoln, Nebraska, the Compass Diagnostic Test in Multiplication was given to all fifth- and sixth-grade pupils in the city. The results of this city-wide test are recorded by showing the percents of pupils in Grades V and VI who scored on or below the third-grade level for the different subtests and the test as a whole. For example, in Part I of the test, it was found that 45 percent of V-A pupils and 51 percent of V-B pupils scored on or below the third-grade level. Considering the test as a whole, it is found that 26 percent of V-B pupils, 25 percent of V-A pupils, 7 percent of VI-B pupils, and 2 percent of VI-A pupils scored on or below the third-grade level. The author of the report sent to the principals and the arithmetic teachers in these grades point out the need of remedial drills for multiplication.

The Third Race Betterment Conference met at Battle Creek, Michigan, January 2 to 6, with Dr. C. C. Little, president of the University of Michigan, acting as President of the Conference. The purpose of this Conference was to release for wider and more general application knowledge—biological, sociological, physiological, bacteriological, and chemical—vital to the optimum of health and well-being. Among the speakers who appeared on this program were Dr. C. B. Davenport, director of the Eugenics Record Office, of the Carnegie Institution, of Washington; Dr. Edward Alsworth Ross, professor of sociology, at the University of Wisconsin; Mr. Albert Edward Wiggam; Judge Harry Olson, of the Municipal Court in Chicago; Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research; Mr. J. J. Davis; and Dr. Glenn Frank, of the University of Wisconsin. Dr. Frank spoke on "The Power of Man to Determine His Own Destiny." In addition to the general sessions, sectional meetings were held to discuss certain problems of physiology, bacteriology, physical education, nutrition and chemistry, public hygiene, personal hygiene, degenerative diseases, and medical education.

When wishing to give either an intelligence test or an achievement test, the teacher or supervisor sometimes finds it difficult to discover just what tests of the sort desired are available, where the norms are given, and how they are expressed. Miss Gambrill and her collaborator, Miss Farwell, have arranged *An Analytical Test of Kindergarten—Primary Tests of Intelligence and*

Achievement in which they have admirably met such difficulties. They have listed under each test the author's name, the nature of the items included in the tests, the sort of norms or standards set, the grades to which the tests may be given, the time needed, and the name and address of the publisher, the date of copyright, and the price.

Only group tests are given. The first section of the booklet is concerned with tests of intelligence; the second section, with tests of achievement which include scales for arithmetic, citizenship, drawing, handwriting, language, reading, and spelling. Five composite tests complete the list.

One is surprised at the number and variety of standardized measures available for use in the first three grades. One wishes that the authors might have added to their contribution some sort of evaluation of each test. In a trial form this list was used during the past summer at several universities and was enthusiastically received by teachers and students.

The Department of Superintendence recently issued a pamphlet outlining the cooperative plan of curriculum revision for the year 1927-28 under the chairmanship of Dr. Edwin C. Broome, superintendent of schools, Philadelphia. The work will center about the development of the high-school curriculum which will be the subject dealt with by the Sixth Yearbook of the Department. In addition to the committee in charge, twelve special committees have been appointed. These committees are charged with the research of that part of the Yearbook dealing with the following topics: Needs of American Adolescent Youth, Objectives of Secondary Education, Study of Curriculums Found in American Secondary Schools, Relationships between High School and College, Appropriateness of High-School Courses for Pupils not Going to College, Differentiation of Curriculums for Pupils of Different Levels of Ability, Relation of Counseling to Secondary-School Curriculum, Curriculum Problems of the Small High School, Study of Senior High-School Teacher, Evaluation of Extra-Curriculum Activities in the Secondary School, Junior College with Reference to the Curriculum Problem as It Centers around Orientation Courses, and Health and Physical Education in Junior and Senior High Schools.

In addition to these twelve committees there are eleven others whose members are charged with the review of research studies concerning secondary-school subjects. Approximately three hundred school systems will participate in this cooperative plan of high-school curriculum revision.

"Teaching as a Fine Art" will be the keynote of the Eighth Annual Ohio State Educational Conference which the College of Education, Ohio State University, will conduct, at Columbus, on April 12, 13, and 14. Last year forty-five hundred persons attended the Annual Conference; this attendance quite shattered all previous figures of registration. The Executive Committee for the Conference this year anticipates that the "new-record-a-year" tradition will be continued.

As in the past, the sectional meetings, held throughout Friday, the second day of the Conference, will be the chief feature of the three-day session.

This provision for group meetings by school people whose interests and problems are similar has met with such evident approval that meetings must now be scheduled, in many instances, in both the morning and afternoon for certain of the sections. To avoid the overlapping which necessarily occurs when the sectional program is extended, some of the group meetings have been scheduled this year for Thursday afternoon. This will be the first Conference at which any meetings have been held in advance of the opening general session held on the evening of the first day.

The following sectional meetings have been arranged for the 1928 Conference. Thursday afternoon, April 12: City Superintendents, County Superintendents, School Librarians, and Parent-Teacher Association; Friday, April 13: Art, Biological Science, City Superintendents, Clinical Psychology, Commercial Education, Deans of Women, Educational and Intelligence Tests, Elementary Principals, Elementary Teachers, English, Geography, High-school Principals, History, Home Economics, Industrial and Vocational Education, Journalism, Junior High-school Principals, Kindergarten and Primary Teachers, Latin, Mathematics, Modern Language, Music, Non-Biological Science, Physical Education, Religious Education, School Business Officials, Special Education, Teacher Training, and Village and Consolidated School Superintendents.

THE RELATIONSHIP BETWEEN READING ABILITY AND CLASS MARKS IN COLLEGE SUBJECTS

To determine the relationship between class marks and the ability to read with comprehension, subject-matter in college psychology, economics, and poetry was the purpose of the investigation reported here. One hundred sixty-five Sophomores and Juniors in five sections of the class studying introductory psychology at Washington Square College and the School of Education, of New York University, were involved in the study.

Scientific objective reading tests were constructed from the selected material because no standardized reading tests were available in those three subjects. The material chosen was unfamiliar to the students taking the tests; it was of such a degree of difficulty as to produce a wide distribution of scores with no zero or perfect scores; and the nature of the material permitted the construction of objective tests. Completion tests, especially prepared for measuring the ability to read psychology and economics, and a multiple-choice test for measuring the ability to read poetry were used. These were administered and scored according to the approved method of scientific test-makers.

Semester marks in only psychology and English composition were considered. These were determined from tests, daily or weekly estimates of class work, and mid-term and final examinations. Semester marks in other subjects of instruction were not used because only a small percent of the 165 students had completed a specific subject.

In Table I are given the various coefficients of correlation which were computed, using the scores received in the different tests. Neither a sufficient number of students nor enough subjects were included in this study to warrant

sweeping conclusions. However, the investigation did bring out the following facts:

1. There is a fair amount of correlation between the reading-test scores in psychology and economics, the composite scores of the three reading tests, and the class marks in psychology.
2. After a lapse of two weeks, reading-test scores in psychology and economics are more closely related to success in psychology, as measured by class marks than are the scores on immediate recall.
3. Composite scores of the three reading tests are much more closely related to success in psychology than either of the three tests alone.
4. Attainment in English composition is evidently not compounded of the same abilities as achievement in psychology or mental ability.

TABLE I

COEFFICIENTS OF CORRELATION COMPUTED BY THE PEARSON PRODUCT-MOMENT FORMULA

	Poetry	Economics[a]	Composite Test	Reading Rate	Mental Ability	Word Knowledge	Marks in English	Marks in Psychology
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Psychology (immediate recall)	.38	.51	.82	.21	.33	.30	.06	.37
Psychology (delayed recall)	.....	.....	.....	.....	.....	.....	.....	.55
Poetry	.....	.10	.50	.11	.21	.27	−.03	.14
Economics (immediate recall)	.....	.....	.82	.13	.25	.33	−.12	.38
Economics (delayed recall)	.....	.....	.....	.....	.....	.....	.....	.42
Composite reading scores	.....	.....	.....	.21	.41	.35	−.04	.46
Reading rate	.....	.....	.....	.....	.22	.16	.03	.06
Mental ability	.....	.....	.....	.....	.....	.31	.12	.29
Word knowledge	.....	.....	.....	.....	.....	.....	.08	.15
Mark in English composition	.....	.....	.....	.....	.....	.....	.....	−.03

[a] Immediate recall.

5. Scores in rate of reading, mental ability, word knowledge, and ability to read poetry show a negligible, or practically zero, correlation with class marks in English composition and psychology.
6. Psychology reading-test scores, economics reading-test scores, delayed recall reading-test scores, and composite scores of the three reading tests show more agreement with class marks in psychology than do scores of mental ability.

A study to determine what other factors are significant in determining success, and the relative importance of each, would be highly significant. It is possible that scores of reading ability based on several typical college subjects would be a much better index of achievement than any test or combination of tests now in use. If such was true, classes could be sectioned on that basis.

Pennsylvania College for Women H. CLAY SKINNER

REVIEWS

WATSON, G. B., AND SPENCE, R. B. *Sketches in and out of School.* New York, The Authors, 1927. viii + 286 pp.

This volume is an attempt to make a course in educational psychology vital and concrete and personally significant, by presenting the material in terms of a series of case problems, with questions and references. There are twenty-four chapters with as many as thirty-one case problems in a chapter.

Both as to method and treatment, the volume is an interesting and vigorous departure from current texts. The problems are very succinct, concrete, and realistic; and the references unusually numerous. The book deserves consideration not only by those teaching courses in educational psychology, but also by those interested in new types of material for college teaching.

The reviewer's only question would center around the use of such a volume in the large class. The materials seem to require teaching of a vigorous discussion type, founded on an amount of scattered reading which the more perfunctory students would doubtless tend to avoid. In short, one would like to know more than is given in the introduction about the ways in which the authors have used the volume in their own classes.

Ohio State University S. L. PRESSEY

SANFORD, VERA. *The History and Significance of Certain Standard Problems in Algebra.* New York, Teachers College, Columbia University, 1927. viii + 102 pp. (Teachers College, Columbia University, Contributions to Education, No. 251)

Students of mathematics, of history, and of education will find great pleasure and stimulation in reading this book. Dr. Sanford possesses considerable ability in scholarly research, and she has presented her results clearly.

The study includes the works of Egyptian, Chinese, Hindu, Hebrew, Arabian, Greek, Italian, German, French, and English writers of textbooks in algebra. The author had access to the collections of rare manuscripts and books in the libraries of Dr. George A. Plimpton and Professor David Eugene Smith of New York and, wherever possible, she took her material from original manuscripts and early editions. The subject-matter of the algebra problem as an outgrowth of the customs of the time, the phrasing of the problem as a reflection of the dominant characteristics of the mind of a people, the appearance again and again throughout the centuries of a few types clothed to suit the

changing conditions of a progressive civilization, the universal appeal of the puzzle problem, the changes in methods of solution due to the development of algebraic symbolism, and the invention of logarithms, are all most ably and interestingly discussed.

The fascinating story leads the reader to appreciate the noble ancestry of most of the problems that occur in our texts today, to become acquainted with a wealth of material which he can use in illuminating and enriching the algebra of today, to evaluate the problems of the present, and to consider the modifications which should be made to make them richer in their contribution to real analytic thinking. Dr. Sanford has written a book which is a challenge and a joy to her readers.

Illinois State Normal University EDITH IRENE ATKIN

LINCOLN ELEMENTARY SCHOOL STAFF. *Curriculum-Making in an Elementary School.* Boston, Ginn and Company, 1927. vi + 369 pp.

Lincoln School of Teachers College, Columbia University, has been in operation ten years. It has been visited, and its work observed and studied by hundreds of educators from all parts of the country. The physical equipment has been excellent and the staff superior. The results of the joint thinking and efforts of the members of that staff have been awaited with keen interest.

The book under review presents the awaited results. In it are given briefly the major activities of the school; the criteria for selecting units of work which replace subjects as the basis of study; a detailed description of several units of work for each grade; a record of the achievements of pupils as revealed by standard tests and other measures of educational outcome; and a brief treatment of certain organizational features, such as the relation of special teachers to the classroom program, the daily schedule, records, and reports. If one has had some experience with the freer type of school organization and classroom activity as a background, the book serves to give a fairly clear picture of the work of this school.

The nature of the school, as presented, is quite in keeping with the most progressive educational principles. Subjects have been discarded in favor of units of work which are similar to many so-called "projects," and subject-matter is studied as it relates to these problems. Pupil-planning, investigating, and problem-solving have replaced lesson-learning. Considerable attention is given to providing conditions and opportunities for more distinctly creative work. Much of the work in the formal subjects arises in connection with the larger unit of work or with some smaller unit. As an instance, we find that no specific time is given to reading above the third grade. Reading thereafter is used for pleasure or as a tool.

While the school is thus free from the usual systematic organization, care is taken that certain necessary features of the child's education are not ignored. A fairly wholesome balance is preserved. Not all learning must arise out of the units of work. "Special lessons in reading and arithmetic, in history and

geography, are provided whenever it is felt that some essential need of the class is not being met'' (p. 30). Drill is not taboo. At first, specific drill is ''based upon real needs of the child. Later, the pupil finds that increasing his skill becomes incentive enough, and real needs in actual situations are lost from the immediate purpose. Drill becomes an end in itself'' (p. 284).

In achievement as measured by standardized tests, the product is quite generally superior to the standards for the several grades. In mastery of skills and factual knowledge the pupils are not suffering. These achievements should be, and are, discounted somewhat because of the student personnel. It is to be regretted that no suitable control school was available to make more certain what to attribute to this freer type of curriculum and method.

The book is a real contribution to the field of elementary education and, especially, to the literature on the elementary curriculum. It will be a source of distinct encouragement and help to anyone who believes in, and is seeking to realize, a more liberal and vital type of education for children. Coming, as it does, as a result of the best thinking of a body of trained, experienced, and critically minded teachers who have been working under the guidance and advice of leaders of ability, it will greatly strengthen the movement for a freer type of classroom organization and curriculum in the elementary school.

Ohio State University O. G. Brim

Educational Yearbook of the International Institute of Teachers College, Columbia University, 1926. (I. L. Kandel, Ed.) New York, Macmillan Company, 1927. xv + 596 pp.

Educational conditions and developments in fourteen countries are reviewed in the present number of this annual publication. The Yearbook has been issued for 1924, 1925, and 1926, and in the three issues we now have reviews of the educational systems of thirty-three different countries selected from every quarter of the world. France, Germany, England, and the United States are covered annually, and these studies will furnish the materials for a growing chart of progress in the nations which would doubtless be regarded as the leaders in western education. The Yearbook for 1924 had a section on method; that for 1925, one on the elementary-school curriculum; and the present volume, one on secondary education in the three countries indicated. Independently of this special section, one-fourth of the present volume is given to the four nations listed.

A brief review will not be expected to give any very full account of a thesaurus such as this volume is. At most one can indicate the plan of the work. The account of each nation is written by an expert, usually by a school official of the country delineated. After an introductory note presenting historical or social facts, the general administration of schools is described; and this is followed by an account of education on various levels, pre-school, elementary, and so on. Great attention is given to new legislation. The education and

status of teachers, adult education, vocational education, medical and social welfare, tests and measurements, current problems, and school statistics are treated. For each country there is a bibliography of source materials which includes official publications, books, and journals.

To put a little content into the formal outline of the last paragraph let us look briefly at the section on Germany. It contains an account of the great religious struggle into which the schools of Germany have been drawn, of the Federal law against indecent literature, and of the progress of disintegration that is overtaking German secondary education, once the marvel of the world. The establishment of new types of secondary schools is briefly treated. There are several pages on the new means for the preparation of teachers and several more on the difficulties in which the universities of Germany find themselves. A few of the 140 proposals made in the Prussian Diet under the heading of education are mentioned. German education since the war is evidently one of the most interesting of social phenomena; and its democratization seems to be a process not unmixed with evil.

The present volume maintains the standards set by its predecessors, and it and the other numbers of the series to which it belongs are indispensable to anyone who wishes to study modern education comparatively—and everyone who has to do with the administration of education should study education comparatively.

Ohio State University H. G. Good

Cubberley, Ellwood P. *State School Administration.* Boston, Houghton Mifflin Company, 1927. xx + 773 pp.

The cumulative experience of the generations that have made America is in this book of Cubberley's. In the author's discussion of the beginnings of state school systems, of the national land grants, of the origin of units of control, of the changes in rural life, of a hundred years of taxation for public schools, of nearly a century of teacher training, one catches something of the sweep of the centuries.

As one reads, one marvels at the grasp the author has upon all the forces and movements of our present day's concern in education. Nowhere in print is there such an inclusive and inspiring analysis of the educational services performed by the National Government. As one reads the chapter on "Higher and Professional Education," he must be dull indeed if he fails to visualize the state university as the "soul of the State." The variety of extension education, the number of non-educational state agencies, the recent and far-flung development of vocational education, and the importance of physical and health education all help us to visualize state school administration in a new sense and in the midst of new forces.

Hardly a question confronts state educational departments today that does not find its analysis and solution offered in this volume. The difficult problems of school finance, of tenure, of federal aid, of contributions from endowed

non-educational agencies, of private or denominational effort, of reorganization of local units—these are but suggestive of the broad range of the author's interest and understanding. When he turns to a discussion of the establishment of the state as the chief unit in educational control, he lifts his discussion into the realm of statesmanship. He conceives of "the state as an active, energetic agent, working constantly and intelligently for the moral, intellectual, scientific, and social improvement and advancement of the people and the betterment of educational conditions throughout the State."

State School Administration is a masterpiece, an analysis of our educational experience as a Nation. It is a handbook for every worker in state education departments and for those others who aspire to such positions. It will be read by thousands who would have a part in shaping the policies and organization of the departments whose leadership they accept.

State Department of Education, New York J. CAYCE MORRISON

HARRIS, JULIA M., DONOVAN, H. L., and ALEXANDER, THOMAS. *Supervision and Teaching of Reading.* Richmond, Virginia, Johnson Publishing Company, 1927. xxi + 474 pp.

The book is divided into two parts. Part I consists of three chapters on the supervision of reading—principles, the supervisory campaign, and the demonstration lesson. Part II includes eleven chapters on the teaching of reading. Such subjects as the following are considered: word difficulties, phonics, primary reading, intermediate reading, motivation, and individual differences.

A significant feature of the book—which adds much to its value—is found in the topics of the chapters which were chosen to answer actual questions of teachers on difficulties in teaching reading. The questions were secured from teachers enrolled in various classes in Teachers College, Columbia University; George Peabody College for Teachers; and other teacher-training institutions. The 2,438 revelant questions submitted showed many references to the same difficulty. Accordingly, they were analyzed, classified, and summarized into the 160 questions listed and answered in the book. Each chapter of Part II is introduced by several questions which are then answered in order in that chapter. Many authors and investigations are utilized in an endeavor "to select the best references to the problem on which information was sought." Ample bibliographic references are appended to each chapter. The book should prove helpful to teachers and supervisors.

Johns Hopkins University FOWLER D. BROOKS

HAMILTON, OTTO TEMPLAR. *The Courts and the Curriculum.* New York, Teachers College, Columbia University, 1927. viii + 168 pp. (Teachers College, Columbia University, Contributions to Education, No. 250)

The author, by a study of the important judicial decisions bearing upon the curriculum of the "public common schools," proposes to isolate the legal

principles involved and thereby to "discover trends in the attitude of the judicial tribunals toward issues pertinent to the curriculum." About six hundred cases were selected for special study. These were carefully briefed and classified under six general headings—"Scope of the Curriculum," "Control of the Curriculum by Legislative Action," "Control of the Curriculum by Local Agencies," "Religion and the Bible in the Public Schools," "Instructional Supplies," and "Adoption and Change of Textbooks." The author quotes freely from the more significant of these decisions, adds some explanations and interpretations, and attempts to draw from them some common legal principles and possible trends.

Among the many interesting facts brought out in the study are those relating to the question of religion and the Bible in the public schools, a question which has been the subject of continuous controversy since 1837. The decisions from nineteen states reveal that complaints which have been the source of judicial adjudication have been raised by Protestants, Jews, Catholics, and non-believers in the Bible. The sources of controversy range from the placing of the Bible in a public-school library to the granting of school credit for outside Bible study. The decisions clearly establish the principle that sectarian instruction is prohibited in the public schools, that public funds are not to be appropriated for such instruction, and that no child may be compelled to attend or support any particular form of worship. When one considers the crucial question as to what constitutes a violation of these principles, however, there is no general agreement.

Those who turn to this little volume with the expectation of finding the final judicial opinion upon curricular questions, will be disappointed. The field is far too broad to allow detailed treatment. However, students of the curriculum who are interested in tracing, in broad outline, the trend of judicial influence should find Dr. Hamilton's study stimulating and helpful.

Ohio State University H. B. ALBERTY

KNOX, ROSE B. *School Activities and Equipment.* Boston, Houghton Mifflin Company, 1927. xxx + 386 pp.

This book is more than a mere catalogue of equipment, it is a guide to the use of this equipment. In giving the "why" as well as the "how" of activities, it is both practical and educative.

Part I gives lists of materials organized around the curricular activities. Some of these materials are to be made by pupils and teachers, others to be purchased. The addresses of firms and approximate prices are included. Part II lists the kinds of general equipment which the average school architect overlooks—time-savers, conveniences, and sanitary necessities which do for the teacher what modern machinery has done for office workers, farmers, and housewives.

In the Appendix is given a valuable list of references all of which pertain to activities in schoolrooms. The teacher who is already eager for aids to help

her carry on activities as a part of her course of study in arithmetic, music, social studies, E..glish, science, or industrial arts and who is constantly searching for materials will welcome a list which seems to contain all that is now available with the exception, perhaps, of purely local items. On the other hand, the teacher who has not yet been able to begin a program of activities and who fails to see the relationship between activity and learning will benefit by a study of the materials suggested in connection with the various subjects.

Toledo, Ohio ESTALINE WILSON

CUNNINGHAM, KENNETH S. *The Measurement of Early Levels of Intelligence.* New York, Teachers College, Columbia University, 1927. x + 74 pp. (Teachers College, Columbia University, Contributions to Education, No. 259)

There has been much discussion as to whether children of a given mental age make a homogeneous group without taking into consideration chronological age or physical growth. In this book, the five lower levels of the CAVD Tests, a continuous scale for adults worked out by the Institute of Educational Research, at Teachers College, Columbia University, under the direction of E. L. Thorndike, were given to a group of children, ranging in age from two and one-half to five and one-half years, who were attending public or private schools or were enrolled in a day nursery and also to a group of adults of approximately the same mental age as the children.

The tests included completion sentences, questions in arithmetic, a vocabulary test, and directions. In the group of young children the high correlation of .925 with Binet seemed to indicate a reliable measure. A comparison of test responses of the two groups indicated that the young normal children made higher scores in the Direction Test than did the adults because this test contained but little material of an informational sort. The adults did better on the tests in arithmetic, but in discrimination of the size of objects they were surpassed by the children, who also did better on the vocabulary test.

Evidently a mental age does not mean the same for an adult as for a child, because of the greater length of experience and the ability to profit by that experience. The results given by the author seem to indicate that there were characteristic differences in the mental processes of the two groups, which were due, in part, to the adults' having lived in the world so much longer and to the keenness of appreciation and the understanding of spatial relationship in the group of normal young children.

The author gives a detailed comparison of the percents of success in individual items and a classification of the items differing in difficulty for the groups. One cannot derive a definite mental age from his scores but a mental-age grouping. The Appendix contains samples of the tests and the scheme for recording the child's attitude to test situations.

Since so much emphasis is being placed on mental-age grouping, a contribution of this kind is important. For school purposes, it would possibly have been more helpful if there had not been such a great difference in the ages of the two groups.

Detroit Special Education Department ANNA M. ENGLE

NASH, J. B. *The Organization and Administration of Playgrounds and Recreation.* New York, A. S. Barnes and Company, 1927. xii + 547 pp.

This new volume is a substantial contribution to both theoretical and practical phases of the subject, written by a man whose studies have been wide and whose experience has been extensive. The book is written in a clear and attractive style, the bibliography is large and well selected, and the illustrations are well chosen.

City-planning and the need for providing play space in such plans are discussed. In this connection the legal side of the matter is considered, and statements are made regarding the powers and liabilities of cities and their officials. The question of what constitutes an adequate system of play and recreation is also considered here. The author describes how city recreational departments are, and should be, organized; the departments to which they should be attached; and the various problems of personnel and staff—including divisions to handle the activity, to supervise the work, to manage its mechanical and clerical phases. The division of duties is thoroughly discussed and tables presented showing costs and salary schedules.

Chapters XIV to XIX deal with the needs of different ages, choice and organization of the activities, programs and division of space among players, and the cost and care of needed apparatus. These chapters emphasize the author's wide experience and attention to essential details.

Michigan State Normal College W. P. BOWEN

TRUSLER, HARRY RAYMOND. *Essentials of School Law.* Milwaukee, Bruce Publishing Company, 1927. xv + 478 pp.

The purpose of this book, as expressed in the Preface, is:

to place within the hands of every school official a systematic treatment of those questions of law which present themselves most frequently in his professional work. It is designed to serve as the basis of instruction in school law in normal schools and teachers' colleges, and it is hoped that the practicing lawyer also will find it serviceable in putting within easy reach the decisions on this branch of the law.

Among the fifteen chapter titles are the following: "Authority and Responsibility of Teachers;" "Rights, Privileges, and Responsibilities of Students;" "Illegal Expenditures of School Money;" "Legal and Illegal Uses of School Property;" and "Legal Aspects of Diplomas and Degrees." To facilitate the use of the volume each chapter is divided into a number of subheads covering various phases of the general chapter topic; for example, in chapter I there are fourteen subtopics.

In addition to stating the rights and liabilities of schools and school officials, an effort has been made throughout the volume to indicate the legal principles upon which these rights and liabilities are based. The author has included in the material that body of common law and statutory instruction which is common to all the states and which enters into practically every controversy affecting schools and teachers. More than fifteen hundred court decisions are alphabetically arranged with page references to their use in the text. Extensive excerpts from these decisions are given in order that the reasoning involved in the decisions may be seen. The material and style of presentation well adapt the volume for college and university courses in school law. A careful analysis of the volume convinces one that the author has accomplished the purpose set forth in the Preface.

Ohio State University T. C. Holy

Kelley, Truman L. *Interpretation of Educational Measurements.* Yonkers, New York, World Book Company, 1927. xiii + 363 pp.

Although many books on educational measurements have appeared within the past decade, the recent volume by Kelley differs markedly from any other. The author has not attempted to cover the whole field of measurements, but rather he has dealt with certain important topics therein, especially with the reliability, validity, and significance of scores. Also, although some of its content is elementary, the book as a whole is decidedly critical, there is probably only one other in this field equally so.

Following a somewhat too brief, but still helpful, historical survey of mental measurement, Kelley considers fundamental questions involved in the purposes of tests, in measuring group and individual achievement, in determining individual idiosyncrasies, and in dealing with unequal development. In one chapter, he gives an excellent, fairly brief presentation and explanation of the elementary statistical procedures employed in connection with the use and critical study of tests; and, in another, supporting evidence for conclusions stated earlier in the book.

The most original feature of Kelley's work, and one which will undoubtedly be put to much practical use by many testers, is a set of tables giving the rankings of some hundreds of tests of general intelligence and achievement. These were rated by a number of expert judges, in most cases either five or seven. The tests included are grouped according to their functions, and those in each group arranged in order of median rankings. It is to be regretted that some tests which apparently possess considerable merit were not rated by the judges, or by too few of them to be included in the regular rankings. But few standardized tests, published at the time the rating was done, of sufficient merit to use in any connection are omitted. Following this is another section in which are listed practically all standardized tests of much worth with a number of such items of information as are useful to persons who wish to select tests. It is perhaps unfortunate that much of the critical information given has been se-

cured from the authors of the tests rather than from those who might be less biased.

On the whole, this book easily deserves to take a front rank among those in its field. It is hardly suited for use as a regular textbook, at least in elementary courses, but every student of educational measurements should be familiar with its contents.

University of Illinois C. W. ODELL

THOMAS, CHARLES SWAIN. *The Teaching of English in the Secondary School.* Boston, Houghton Mifflin Company, 1927. xxii + 604 pp.

This is a revised edition of the well-known text, enlarged by the addition of 150 pages. New chapters have been added on "The Teaching of Spelling" and "Scales and Measures." The Appendix, with its list of theme topics, has been greatly enlarged by new material on the high-school course in English, school libraries, and library instruction, and by many useful suggestions for supplementary reading. Questions and comments of excellent quality have been provided in generous quantity for the benefit of classes in special methods in English.

"The general theory on which this text was founded ten years ago remains intact," says the author. It remains intact in this book, but it has undergone extensive modifications in the practice of teaching English in many of the newer schools. Though far less academic than the original edition, this book still preserves a good deal of the fine traditional flavor of the English course for general culture for which Mr. Thomas has always stood. Its scholarship, its clear, well-balanced style, its restraint and good taste, and its high ideals remain, although the author has obviously gone as far as his conscience permits in adjusting himself to the more revolutionary types of courses in English.

The weak points of this edition, as of the older one, are the chapters on "Composition and Its Essentials" and "Oral Composition." Little recognition is given to the immense advance which has been made during the last decade in the social motivation of English composition and in the problem-project approach. Few young teachers would learn from these chapters how to make the work in composition more than practice in theme writing. The vitality, spontaneity, and immediacy of interest which the newer methods aim for are in the author's mind, of course, but they are not the center of the work as I feel they must be, if English composition is to train for creative power rather than for formal correctness.

The chapters on teaching literature are easily the best things in the book. Creative reading and vitalized interpretation have always been stressed by the author, and of recent years he has, in many lectures, inspired hundreds of teachers with high ideals of achievement in this exacting but rewarding task. These chapters are discriminating, practical, and finely conceived. The questions and exercises suggested are admirable.

The new material on spelling is better than any material in similar books now available and provides ample material for the students' further research. The chapter on "Scales and Measures" is calm and well-balanced, takes a sane and sound position, and, best of all, gives as ample information on the subject as any English teacher could possibly ask.

Taken all in all this new edition, though certain chapters are not so good as some other treatments of the same material, is easily the best book of its kind now available. The other texts in the field will be forced to undergo adequate revision or be superseded. As an exponent of conservative practice in the teaching of English for general culture, it is safe to say that this book will hold first place for a long time.

Mount Holyoke College RALPH PHILIP BOAS

PUBLICATIONS RECEIVED OCTOBER 15 TO NOVEMBER 15

BOOKS FOR TEACHERS AND SUPERVISORS

Columbia University. Teachers College. Lincoln School. Staff of the Elementary Division. *Curriculum making in an elementary school.* Boston, Ginn, 1927. 359 pp. $1.80.

Cook, C. G. *New-type questions in chemistry.* New York, Globe Bk. Co., 1927. 91 pp. $.80.

Craig, G. S. *Tentative course of study in elementary science for grades I and II.* New York, Teachers College, Columbia Univ., 1927. 91 pp. $.90.

Fish, C. R. *History of America.* New York, American Bk. Co., 1927. Teachers' manual. 56 pp. $.48.

Forbush, W. B., and Allen, H. R. *The book of games for home, school, and playground.* Philadelphia, Winston, 1927. 315 pp. $2.00.

Frank, J. O. *Teaching first-year chemistry.* Oshkosh, Wis., J. O. Frank & Sons, 1927. 148 pp. $2.00.

Frasier, G. W., and Armentrout, W. D. *An introduction to education.* Rev. ed. Chicago, Scott, Foresman, 1927. 364 pp. $1.80.

Glass, F. J. *Drawing, design, and craft-work for teachers, students, etc.* 2d ed. New York, Scribner, 1927. 235 pp. $4.75.

Hartshorne, Hugh, and others. *Testing the knowledge of right and wrong.* Chicago, Religious Education Assn., 1927. 72 pp. (Monograph no. 1) $.75.

Hunter, G. W. *New civic biology.* New York, American Bk. Co., 1927. Teachers' manual. 105 pp. $.60.

Johnson, W. H. *Fundamentals in visual instruction.* Chicago, Educational Screen, 1927. 104 pp. $2.00.

Miller, H. L. *Creative learning and teaching.* New York, Scribner, 1927. 262 pp. $1.80.

Mosher, C. D. *Personal hygiene for women.* Stanford University, Calif., Stanford Univ. Press, 1927. 97 pp. $1.50.

Mursell, J. L. *Principles of musical education.* New York, Macmillan, 1927. 300 pp. $1.80.

Odell, C. W. *Educational tests for use in elementary schools, second revision.* Urbana, Ill., Univ. of Illinois, 1927. 44 pp. (Educational research circular, no. 49) $.30.

Patterson, M. S., and Patterson, Herbert. *How to teach thrift; a manual for teachers and parents.* Oklahoma City, Okla., Harlow Pub. Co., 1927. 40 pp. $.35.

Stull, DeForest, and others. *Tentative course of study in geography for the primary grades, intermediate grades, junior high school.* New York, Teachers College, Columbia Univ., 1927. 288 pp. $2.25.

Thomas, C. S. *The teaching of English in the secondary school.* Boston, Houghton Mifflin, 1927. 604 pp. $2.40.

Thompson, Helen. *An experimental study of the beginning reading of deaf-mutes.* New York, Teachers College, Columbia Univ., 1927. 83 pp. (Contributions to education, no. 254) Cloth, $1.50. Paper, $1.25.

Watkins, M. L., and Evans, Anna. *Teaching English; a book of helpful plans and devices for teachers of elementary English.* Fort Worth, Tex., Pioneer Pub. Co., 1927. 124 pp. $1.00.

Whiting, H. A. *Primary education.* 2d ed. Boston, Christopher Pub. House, 1927. 143 pp. $2.00.

BOOKS FOR HIGH-SCHOOL STUDENTS

Boas, F. S. *An introduction to the reading of Shakespeare.* New York, Oxford Univ. Press, 1927. 112 pp. $1.00.

Breslich, E. R. *Senior mathematics.* Chicago, Univ. of Chicago Press, 1927. Book 2. 296 pp. $1.50.

Espinosa, A. M. *Easy Spanish conversation.* Chicago, Sanborn, 1927. 90 pp. $.84.

Foster, W. E. *Second-year Latin.* Richmond, Va., Johnson Pub. Co., 1927. 631 pp. $1.80.

Frost, S. E. *Standard historical studies.* Fort Worth, Tex., Pioneer Pub. Co., 1925-26. English. 67 pp. United States, elementary. 80 pp. United States, advanced. 69 pp. Early European. 80 pp. Modern European. 80 pp. $.25 each.

Heydrick, B. A. *One term course in English and American literature.* New York, Noble & Noble, 1927. 325 pp. $1.30.

Humphrey, Grace. *The story of the Williams.* Philadelphia, Penn Pub. Co., 1926. 224 pp. $2.00.

The life of Rome, illustrative passages from Latin literature. Selected and trans. by H. L. Rogers and T. R. Harley. New York, Oxford Univ. Press, 1927. 264 pp. $2.50.

McKinley, A. E., and others. *World history today.* New York, American Bk. Co., 1927. 859 pp. $1.92.

McMurtrie, D. C. *Alphabets; a manual of letter design, with complete alphabets of varied styles of lettering.* Pelham, N. Y., Bridgman Publishers, 1927. 64 pp. $1.00.

Meyer, A. E. *Fundamentals of German.* New York, Globe Bk. Co., 1927. 164 pp. $1.00.

Phillips, LeRoy, and Johnson, Theodore. ed. *Types of modern dramatic composition; an anthology of one-act plays for schools and colleges.* Boston, Ginn, 1927. 418 pp. $1.60.

Pope, P. R. *A German reader for beginners.* New York, Holt, 1927. 151 pp. $1.35.

Reigner, C. G. *New dictation course in business literature.* Baltimore, H. M. Rowe, 1927. 300 pp. $1.40.

Scoggins, C. E. *The red gods call.* Indianapolis, Bobbs-Merrill, 1926. 364 pp. $2.00.

Shakespeare, William. *The tempest.* Ed. by E. M. Penney. Philadelphia, Winston, 1927. 125 pp. $.68.

Smith, H. R., and Mess, H. M. *Modern experimental chemistry.* New York, Holt, 1927. 204 pp. $1.00.

Smith, William. *A smaller classical dictionary.* Ed. by E. H. Blakeney. New York, Dutton, 1927. 644 pp. $.80.

Whitaker, L. C. *Spoken thought; a text book on vocal expression for use in high schools, normal schools and colleges.* New York, Barnes, 1927. 596 pp. $3.00.

BOOKS FOR JUNIOR HIGH-SCHOOL STUDENTS

Abbott, Jane. *Barberry gate.* Philadelphia, Lippincott, 1925. 300 pp. $1.75.

Barnard, J. L., and Roorbach, A. O. *Epochs of world progress.* New York, Holt, 1927. 811 pp. $2.40.

Driggs, H. R. *Living English for junior high schools.* Lincoln, Nebr., University Pub. Co., 1927. Book 1. 328 pp. $1.00. Book 2. 405 pp. $1.20.

Evans, L. B. *The trail blazers, pioneers of the Northwest.* Springfield, Mass., Milton Bradley Co., 1925. 282 pp. $1.75.

Ginther, Pemberton. *Hilda of the three star ranch.* Philadelphia, Penn Pub. Co., 1926. 306 pp. $1.75.

Hughes, R. O. *Community civics.* Boston, Allyn & Bacon, 1927. 505 pp. $1.40.

Rolt-Wheeler, Francis. *The boy with the U. S. navy.* Boston, Lothrop, Lee, 1927. 264 pp. $1.75.

BOOKS FOR ELEMENTARY-SCHOOL STUDENTS

Coffman, Ramon. *The story of America.* Dansville, N. Y., F. A. Owen Pub. Co., 1927. Book 1, The age of discovery. 127 pp. $.72.

Coleman, B. B., and others. *The pathway to reading.* New York, Silver, Burdett, 1927. Teacher's manual for fourth, fifth, and sixth readers. 170 pp. $.56.

Duval, E. W. *This earth we live on.* New York, Stokes, 1927. 156 pp. $3.00.

Franck, H. A. *China, a geographical reader.* Dansville, N. Y., F. A. Owen Pub. Co., 1927. 256 pp. $.96.

Franck, H. A. *The Japanese empire, a geographical reader.* Dansville, N. Y., F. A. Owen Pub. Co., 1927. 256 pp. $.96.

Hallock, G. T. *After the rain; cleanliness customs of children in many lands.* New York, Cleanliness Institute, 1927. 96 pp.

Hooker, F. C. *Cricket, a little girl of the old West.* Garden City, N. Y., Doubleday, Page, 1927. 344 pp. $1.75.

Howitt, Mary. *The children's year in a happy home.* Ed. by Emilie Poulsson. Boston, Lothrop, Lee, 1927. 240 pp. $1.75.

Johnson, E. M. *My progress book in reading.* New York, Looseleaf Education, Inc., 1927. No. 1, An individual record of important reading abilities. 71 pp. $.25.

King, Julius. *Dogs.* New York, Nelson, 1927. Unp. $1.00.

Krapp, G. P. *Kipwillie; a story of city life.* Chicago, Rand McNally, 1927. 166 pp. $.80.

Krapp, G. P. *Tongo; a tale of the great plains.* Chicago, Rand McNally, 1927. 174 pp. $.90.

Lefferts, Walter. *Our neighbors in South American.* Philadelphia, Lippincott, 1927. 306 pp. $1.20.

McElroy, M. J., and Younge, J. O. *The squirrel tree.* New York, American Bk. Co., 1927. 94 pp. $.48.

MacManus, Seumas. *Donegal fairy stories.* Garden City, N. Y., Doubleday, Page, 1927. 256 pp. $2.00.

McMurry, F. M., and Benson, C. B. *Answers to Arithmetic practice.* New York, Macmillan, 1927. Grade three. 104 pp. Grade four. 132 pp. $.12 each.

Meyer, Zoe. *Followers of the trail.* Boston, Little, Brown, 1926. 217 pp. $1.50.

Moulton, N. F. *The health guard brownies.* Boston, Little, Brown, 1926. 160 pp. $1.00.

Richey, G. V. *The Pioneer geography help-book.* Fort Worth, Tex., Pioneer Pub. Co., 1927. North America. 96 pp. $.50. South America. 36 pp. $.32. Africa-Australia. 48 pp. $.44. Eurasia. 128 pp. $.56.

Rush, C. E., and Winslow, Amy. *Modern Aladdins and their magic; the science of things about us.* Boston, Little, Brown, 1926. 318 pp. $1.50.

Salisbury, E. I. *From Panama to Cape Horn, a South American reader.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. 294 pp. $1.40.

Sherman, J. W. *The captain of the clothespins.* Boston, Little, Brown, 1926. 143 pp. $1.00.

Thiele, C. L., and others. *My first number book for grades 2B and 2A.* Chicago, Rand McNally, 1927. 134 pp. $.75.

Watkins, M. L., and Evans, Anna. *Learning English help book; a project book in elementary English for use with any text.* Fort Worth, Tex., Pioneer Pub. Co., 1927. Book 1. 40 pp. $.36. Book 2. 64 pp. $.44.

MISCELLANY

Hamilton, F. W. *Preparation of printers' copy.* Chicago, United Typothetae of America, 1918. 21 pp. $1.50.

Hamilton, F. W. *A printer's manual of style.* Chicago, United Typothetae of America, 1927. 121 pp. $2.00.

Nesbit, W. D. *After-dinner speeches and how to make them.* Chicago, Reilly & Lee, 1927. 238 pp. $2.50.

TESTS AND SCALES

Buchanan, M. A., and others. *American council alpha Spanish test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Part I, Forms A and B; Part II, Forms A and B. Specimen set, $.35.

Callcott, Frank, and others. *American council beta Spanish test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Forms A and B. Specimen set, $.25.

Carman, H. J., and others. *Columbia research bureau American history test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Forms A and B. Specimen set, $.30.

Contreras, M. de la S.S., and others. *A silent reading test in Spanish.* Bloomington, Ill., Public School Pub. Co., 1927. Forms A and B. Sample set, $.10.

Contreras, M. de la S.S., and others. *A test of Spanish vocabulary.* Bloomington, Ill., Public School Pub. Co., 1927. Forms A, B, and C. Sample set, $.15.

Degraff, M. H., and others. *Iowa general information test in American history.* Iowa City, Ia., Bureau of Educational Research and Service, University of Iowa, 1927. Forms A and B. Unit set, $.45.

Greenberg, Jacob, and Wood, B. D. *American council beta French test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Forms A and B. Specimen set, $.25.

Henmon, V. A. C., and others. *American council alpha French test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Part I: Forms A and B; Part II: Forms A and B. Specimen set, $.35.

Henmon, V. A. C., and others. *American council alpha German test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Part I: Forms A and B; Part II: Forms A and B. Specimen set, $.40.

Kepner, Tyler. *The Harvard tests: Background in social studies.* Boston, Ginn, 1927. Forms A and B. $.60 per pad.

King, F. B., and Clark, H. F. *King-Clark foods test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1926. Form A. Specimen set, $.10.

Knight, F. B., and McClure, W. E. *Arithmetic neatness scale for measuring neatness and legibility of written work.* Chicago, Scott, Foresman, 1927. 1 sheet, $.25.

Kuhlmann, Frederick, and Anderson, R. G. *Kuhlmann-Anderson intelligence tests for ages six to maturity.* Minneapolis, Minn., Educational Test Bureau, 1927. 35 tests. Specimen set, $1.45.

Nash, H. B., and Van Duzee, R. R. *Industrial (manual) arts test for junior and senior high school.* Milwaukee, Bruce Pub. Co., 1927. Test I: Woodwork, Scale A. Specimen set, $.25.

Parker, C. M., and Waterbury, E. A. *Detroit reading test.* Yonkers-on-Hudson, N. Y., World Bk. Co., 1927. Test I: Forms A and B; Test II: Forms A, B, and C; Test III: Forms A, B, C, and D; Test IV: Forms A, B, C, and D. Specimen set, $.25.

Sims, V. M. *Sims score card for socio-economic status.* Bloomington, Ill., Public School Pub. Co., 1927. Form C. Sample set, $.15.

Streeter, Nina, and Trilling, Mabel. *A test at the completion of food preparation courses in the junior high school.* Bloomington, Ill., Public School Pub. Co., 1927. Sample set, $.10.

Tyrrell, J. F. *Tyrrell's geography completion exercises.* Boston, Palmer Co., 1927. 15 tests. Specimen set, $.25.

Van Wagenen, M. J., and Patterson, S. H. *American council on education German reading scales.* Bloomington, Ill., Public School Pub. Co., 1927. Scale A: Divisions 1 and 2. Sample set, $.20.

EDUCATIONAL RESEARCH ASSOCIATION

TENTATIVE PROGRAM

FOR THE BOSTON MEETING OF THE

EDUCATIONAL RESEARCH ASSOCIATION

DINNER MEETING

Monday, 6:00 P. M.

Italian Room, Lenox Hotel

JOHN K. NORTON, *Research Division, National Education Association*, Presiding

Presidential address: "The Purpose of the Educational Research Association."

CLOSED MEETINGS

SECTION A

Tuesday, 9:15 A. M.

Tavern Room, Commander Hotel

M. R. TRABUE, *State Department of Education, Trenton, New Jersey*, Presiding

Studies Concerning School Administration and Organization

"Changes in the Legal Status of the Superintendent of Schools," J. C. MORRISON, *New York State Department of Education*

"The Economic Effects of Education," HAROLD F. CLARK, *Indiana University*

"The Questionnaire in Education," LEONARD V. KOOS, *University of Minnesota*

"Statistical Hazards in Educational Research," BARBARA STODDARD BURKS, *Stanford University*

SECTION B

Tuesday, 9:15 A. M.

Ballroom, Commander Hotel

CARLETON WASHBURN, *Superintendent of Schools, Winnetka, Illinois*, Presiding

Studies in Learning and the Efficiency of Teaching Methods

"Measurement of the Power to Learn," STUART A. COURTIS, *University of Michigan*

"Determining a More Effective Arrangement of Problems for Teaching Principles in Arithmetic," FRANK L. CLAPP, *University of Wisconsin*

"Amount of Practice Needed to Master the One Hundred Addition and Subtraction Facts," F. B. KNIGHT, *University of Iowa*

"Determining the Best Method of Presenting Graphic and Tabular Matter to Junior High-School Children in Social Science," JOHN N. WASHBURNE, *Bronxville, New York*

"An Inventory of Certain Aspects of Learning in High-School Chemistry," EARL R. GLENN, *Lincoln School, Teachers College*

JOINT MEETING OF THE NATIONAL SOCIETY OF COLLEGE TEACHERS OF EDUCATION AND THE EDUCATIONAL RESEARCH ASSOCIATION

Tuesday, 2:00 P. M.

Sanders Theatre, Harvard University

WILLIAM WEBB KEMP, *University of California, Presiding*

The Bureau of Research in Public-School Systems

"What the Superintendent Expects of a Research Bureau," FRED M. HUNTER, *Superintendent of Schools, Oakland, California*

"The Place of Research in a School System," S. A. COURTIS, *University of Michigan*

"The Training of Directors for Public-School Research Bureaus," JOHN W. WITHERS, School of Education, New York University

Discussion, B. R. BUCKINGHAM, *Bureau of Educational Research, Ohio State University*

CLOSED MEETINGS

SECTION A

Wednesday, 9:15 A. M.

Ballroom, Lenox Hotel

FRANK N. FREEMAN, *University of Chicago*, Presiding

Derivation and Validation of Tests and the Nature of Qualities Tested

"A Graphic Method of Calculating Multiple Correlations," E. R. WOOD, *Kansas State Teachers College*
Discussion, KARL J. HOLZINGER, *University of Chicago*

"Do Bright and Dull Children Differ Qualitatively as Well as Quantitatively?" M. J. VAN WAGENEN, *University of Minnesota*
Discussion, S. A. COURTIS, *University of Michigan*

"The Construction of a Standardized Test and Practice Exercises in Language Skills for Junior and Senior High Schools," HENRY D. RINSLAND, *University of Oklahoma*

"A Foreign-Language Prognosis Test," PERCIVAL M. SYMONDS, *Teachers College, Columbia University*

"Evaluation of Some Types of Classroom Test," DON C. ROGERS, *Chicago*
Discussion of papers by Messrs. Rinsland, Symonds, and Rogers led by A. S. OTIS, *World Book Company*

"The Measurement of the Results of School Health Programs," RAYMOND FRANZEN, *American Child Health Association*

"The Development of a Central Agency for the Study of Tests," G. M. WHIPPLE, *Danvers, Massachusetts*

SECTION B

Wednesday, 9:15 A. M.

Society for Natural History, Boylston Street at Copley Square

MARGARET M. ALLTUCKER, *Research Division, National Education Association*, Presiding

Studies of Curriculum Content

"Changing Needs as Exemplified in Spelling," ERNEST HORN, *University of Iowa*

"Relative Efficiency of Children Who Begin Arithmetic in the First, Second, and Third Grades," CARLETON WASHBURNE, *Superintendent of Schools, Winnetka, Illinois*

"Language Errors Attached to an Individual Child," GUY M. WILSON, *School of Education, Boston University*

"A Summary of the Findings from Two Learning Studies in the Field of Secondary School Science," S. R. POWERS, *Teachers College, Columbia University*

"Making Citizens of the Mentally Limited," HELEN DAVIS WHIPPLE, Danvers, Massachusetts

"The Thought Content of Several Well-Known Textbooks," W. J. OSBURN, *Director, Educational Measurements, State Department of Public Instruction, Madison, Wisconsin*

OPEN MEETING

Wednesday, 2:00 P. M.

Huntington Hall, Rogers Building, Massachusetts Institute of Technology

JOHN K. NORTON, *Research Division, National Education Association*, Presiding

Research in Some of Its Larger Aspects

"The Place of Research in a Program of Curriculum Development," CHARLES H. JUDD, *University of Chicago*

"The Testing Movement in the Light of Recent Research," EDWARD L. THORNDIKE, *Teachers College, Columbia University*

"Promising Lines of Psychological Research in Education," LEWIS M. TERMAN, *Stanford University*